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ISSUE 150 JUNE 2014

INSIDE THIS ISSUE

15 - 18 >

HOW TIMES HAVE CHANGED

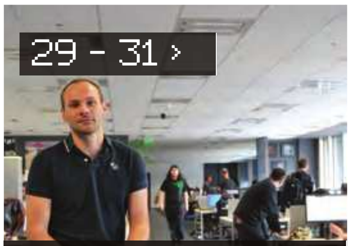
Development legends and former Develop cover stars discuss how the industry has evolved since the magazine first landed on desks in 2000, and the opportunities created for the studios of today

21 - 25 >

RACING SPECIAL

The art of va-va-vrooom

29 - 31 >



WARGAMING SPEAKS

Developing in a warzone

43 - 45 >

NEXT-GEN SMARTS

The future of AI

REGULARS Develop Diary **P09** • #DevelopJobs **P37** • Directory – Spotlights **P61** • FAQ **P66**

ALPHA

InnoGames' mobile push **P04**
Develop Live **P05**
The new event for Scotland
Nick Gibson **P10**
Can mobile save Japan?
Alex Ward: Fixing Xbox **P11**

BETA

Working with fans **P24**
Codemasters on collaboration
Virtual racing: the reality **P25**
Eutechnyx discusses VR
Gollop reborn **P34**
The Xcom creator returns

BUILD

Craft Animations **P46**
Guide: Graphics tools **P48**
Key Release **P50**
Heard About **P51**
Unreal Diaries **P54**
Microsoft Spotlight **P55**

EDITORIAL

150? HOW DID THAT HAPPEN?

WHEN I WAS young, I wondered whether old people were right. Did all that experience add up to wisdom?

Now I'm hurtling towards an answer, and the early results are in: Definitely not!

One thing you do get, though, is perspective. You've seen a lot, you know things could have gone another way. I think this is why students are society's natural revolutionaries, whereas their parents urge them to come inside and stop shouting. It's easy to burn things down, but harder to know what to build.

If you wrote a history of the past 14 years of games development, you'd plot the seemingly inevitable impact of the internet, the proliferation of platforms, the Cambrian explosion of business models – and the implosion of old-line studios too heavy to carry their weight in the new ecosystem.

But 150 issues ago, the future looked quite different.

What we thought would wipe out the middle-sized UK developers was the opposite of what actually did for them. It looked like our mittelstand had to grow up or become irrelevant. Development would be an industry of 1,000-strong teams in game factories turning out triple-A titles as efficiently as a Japanese car manufacturer.

Even the changes we did foresee – the internet everywhere, digital distribution and games going mainstream – took a path that honestly would have surprised everyone.

You'll play your part in the next evolution of this fascinating and ever-changing art form. Better to create it than to guess at it. Be ready to be amazed!

Owain Bennallack
Guest Editor
(Editor, Develop #1–58)

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InnoGames scaling up for mobile gaming push

CEO Hendrik Klindworth says aggressive growth in mobile is manageable despite rising costs of marketing

by Craig Chapple

HAMBURG FREE-TO-PLAY developer InnoGames aims to hire 100 employees during 2014 as it scales up its business for a push into mobile.

The developer just opened its new headquarters, a large office in central Hamburg, housing its own gym, cafeteria and sauna, as it prepares for an influx of new hires.

And after hitting revenues of €70m in 2013, the studio is now setting eyes on the mobile gold rush.

InnoGames has already released its hit browser titles *Grepolis* and *Tribal Wars* on mobile, and has just announced cross-platform game *Rising Generals* for both mobile and browser – signalling its intentions to expand out from its browser gaming roots.

InnoGames CEO Hendrik Klindworth (*pictured*) told *Develop* that the company is now enjoying stronger growth on mobile than it was seeing on its web titles.

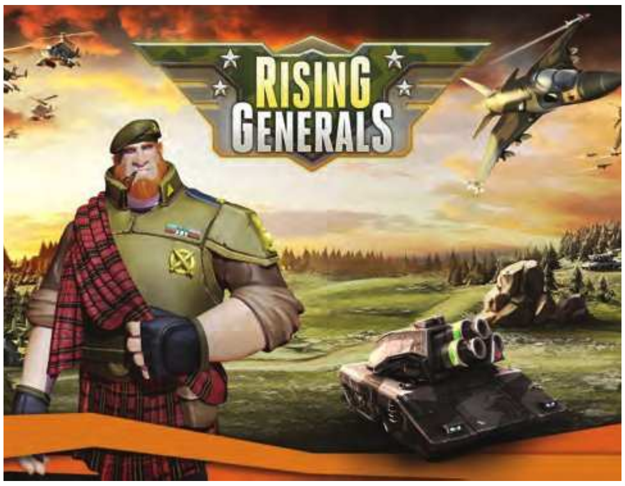
“Browser still has a huge audience. But to expedite and find new opportunities for our growth it makes total sense for our games, and also our players, [to release games for mobile],” he said.

“They’re asking when can I play my game on this device? When can I play it on my tablet? When can I play it on the iPhone? It’s really a strong request from our userbase.”

To support this push into mobile games development, last year InnoGames hired 100 staff, and plans to hire another 100 this year, bringing its total headcount to 400.

Klindworth said such aggressive expansion was important so it could continue looking after its current roster of games while also adding new titles, such as the newly unveiled *Rising Generals*, to its portfolio.

InnoGames has recently opened its new headquarters in Hamburg and plans to grow its headcount to 400 staff by 2015



“We don’t launch a product and then have the team move on to another thing,” he explained. “Sometime there are even more people working on a successful game that is already live than a title in development. And if you can go for multiple platforms, of course, you also need some more people as that takes some effort.”

Klindworth is adamant, however, that the company is not growing too fast, and won’t suffer a similar fate as many companies before it, such as Zynga.

InnoGames claims to have been profitable every year since it was established in 2003, and Klindworth believes this will not change despite the rising costs of his business.

“In general, the best rule is to grow your revenues faster than the number of employees. And most of the years we were able to do this,” he said.

“Of course, marketing costs also go up. It’s still a profitable business. But nowadays you’re not allowed to waste money. If you look back a couple of years ago you could waste a bit of money and still be extremely profitable.

“So we are not hiring people just for the sake of doing so. We have ideas for new games we want to create. We really have the energy to also work on existing games and in the area of marketing we need more people to market our games.” ■

RISING USER ACQUISITION COSTS

THE INNOGAMES CEO Hendrik Klindworth says user acquisition costs for browser games are now six times higher than they were just a couple of years ago, and the same is happening to mobile.

He said the plethora of big companies paying large sums of money to bring in players are raising prices, but is confident his company can continue to be successful on browser.

“It’s a successful business model, so everyone puts a bit more money into it to get more users and the price is going up,” he said. “We already saw this trend in browser a couple of years ago. Prices multiplied by a factor of six or so over a couple of years.

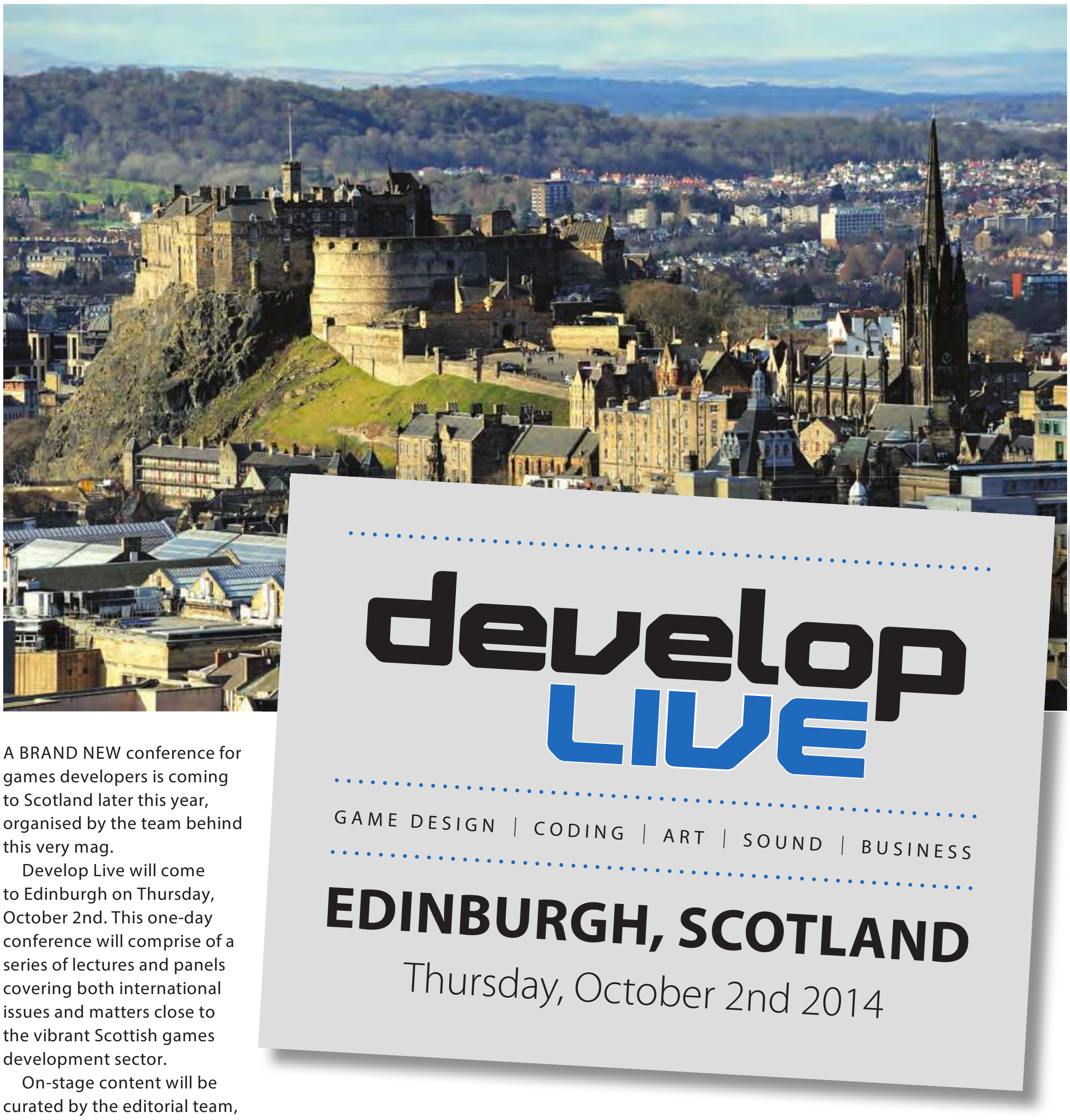
“But we are prepared for this. For mobile we expect the same thing. The prices will go up further.

“What you should always do is target and find the right users for your game. Then it’s okay to pay a bit more because when they really love your game and play it for a long time, then it makes sense.

“It will get more challenging, but we are prepared for this.”

Develop Live debuts in Scotland this year

Inaugural event from the team behind Develop will make its first outing in Edinburgh on Thursday, October 2nd ● Tickets and sponsorship deals now available, call for speakers open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LIVE
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EDINBURGH, SCOTLAND
Thursday, October 2nd 2014

A BRAND NEW conference for games developers is coming to Scotland later this year, organised by the team behind this very mag.

Develop Live will come to Edinburgh on Thursday, October 2nd. This one-day conference will comprise of a series of lectures and panels covering both international issues and matters close to the vibrant Scottish games development sector.

On-stage content will be curated by the editorial team, making this the first event of its type brought to you by the people behind *Develop*'s monthly print magazine and its popular website, **www.develop-online.net**.

While we're planning our own surprises for the day, a call for speakers has also been opened. To find out how to submit a talk proposal, email **developlive@intentmedia.co.uk**.

The full schedule and other details about the inaugural Develop Live will be announced in the coming months.

"Scotland is home to both some of the world's biggest and most commercially powerful studios and some of its most innovative, forward-thinking developers," said *Develop* publisher Michael French. "It's about time they had a global games development event on their doorstep."

Editor James Batchelor added: "Develop Live will be a place to share ideas and insight, whether that's about immediate matters like game funding and tax breaks or deeper issues around content and creativity – just like the *Develop* website and magazine is.

"We're looking forward to sharing details of the first confirmed speakers very soon and unveiling our keynote sessions."

Tickets cost £149, and competitive sponsorship packages are available. Contact **Alex.Boucher @intentmedia.co.uk** for more information on booking your place or getting more involved with the event.

Develop Live will take place two days before Game Expo Scotland, a new consumer event that will be held in the Scottish capital across the weekend of October 4th and 5th. Game Expo Scotland is organised by Magdala Media. ■

develop iPad

Videos are available within the iPad edition of *Develop* on iTunes and the browser-based Digital Edition, which can be accessed at develop-online.net

develop
BETA
App attack!

THIS MONTH

Check out the video demos of the latest new technology and design techniques.

SpeedTree demonstrates its vegetation middleware

P48

Deus Ex: Human Revolution reborn in Unreal Engine 4

P54

Fireproof Games shows off *The Room Two*

P58

'There will be a game as big as World of Warcraft in our lifetime'

Carbine Studios' Jeremy Gaffney believes subscription-based MMOs can still survive in the modern industry

by Craig Chapple

The business model for Wildstar (above) mixes monthly fees with free-to-play, but Gaffney (below) claims the next big MMO will build on the model of WoW (right)

THERE WILL BE another MMO as big as *World of Warcraft*, and it could be subscription-based, says Carbine Studios' Jeremy Gaffney.

The industry veteran and executive producer behind upcoming subscription MMO *WildStar*, is adamant MMOs can still attract swathes of users despite the proliferation of titles attempting to emulate *WoW's* success.

And despite a number of titles, such as EA's *Star Wars: The Old Republic*, turning free-to-play after early struggles, Gaffney said to be as big as *WoW*, you have to use a regular payment model.

"There will be something bigger [than *World of Warcraft*] in our lifetimes," he said.

"Depending how you count all the various markets there are games that are arguably bigger now globally, in terms of players. In terms of revenues, it's tricky to catch up with because you have to be that big and you have to be subscription. You don't usually average $15 a month off your free-to-play game per user."

Gaffney explained that typically great MMOs run at five-to-seven per cent churn a month, and that studios need to acquire or reacquire users to make up the difference and then grow their playerbase.

He suggested that *World of Warcraft*, having been out for nearly a decade, is likely to have churned through its entire userbase two or three times.

Despite obtaining new users and retaining a core playerbase in that time, Gaffney said new titles that sell a few million are not guaranteed long-term hits.

"There's a market out there that's definitely interested in repeating the positive experience they've had with games in the past," he said.

"But no one's had the stickiness to really truly hook them in and keep them in any sorts of large numbers since then, so somebody will be able to duplicate that formula."

ARE MICROTRANSACTIONS INEVITABLE?

Carbine's *WildStar* title itself will be a subscription-based title, but its creators are implementing a CREDD system: in-game items that players can buy on the commodities exchange with their gold to extend their subscription by 30 days. This means gold earned in-game can be used to purchased an extra 30 days subscription.

The new model appears to be a merger of subscriptions and free-to-play, but swayed more to the premium model and based on gameplay rather than 'pay-to-win'.

And despite the increasing presence of microtransactions in MMOs, Gaffney isn't convinced their inclusion is a certainty in future games.

> ***There's a market out there but no one's had the stickiness to hook them in.***
>
> Jeremy Gaffney, Carbine Studios

"How do you monetise without 'being evil'? That's the question," he said. "You could have a low sub, and then make up some microtransactions. Or you could give a salary to people who had a sub that lets them get microtransactions so they don't think like you're taken advantage of them. There's probably ways of doing it."

He added: "I don't think *WoW's* microtransactions hurt them particularly with their playerbase. Maybe the level up to 91 to an extent, but that's really just reflecting you can buy a box and do the same thing. I don't think they were hurt by it, so certainly you can add it to the mix.

"But simultaneously I think people are pretty leery of getting screwed and being taken advantage of, so I think it's a bit of a dangerous area to go out and say, 'We want a box, a subscription, your firstborn and can you sign here and, oh, by the way, we need a DNA sample'. That gets real dangerous at some point. You don't want the player wondering how they're going to get screwed over next." ■

CREATING AMAZING iOS/MOBILE GAMES

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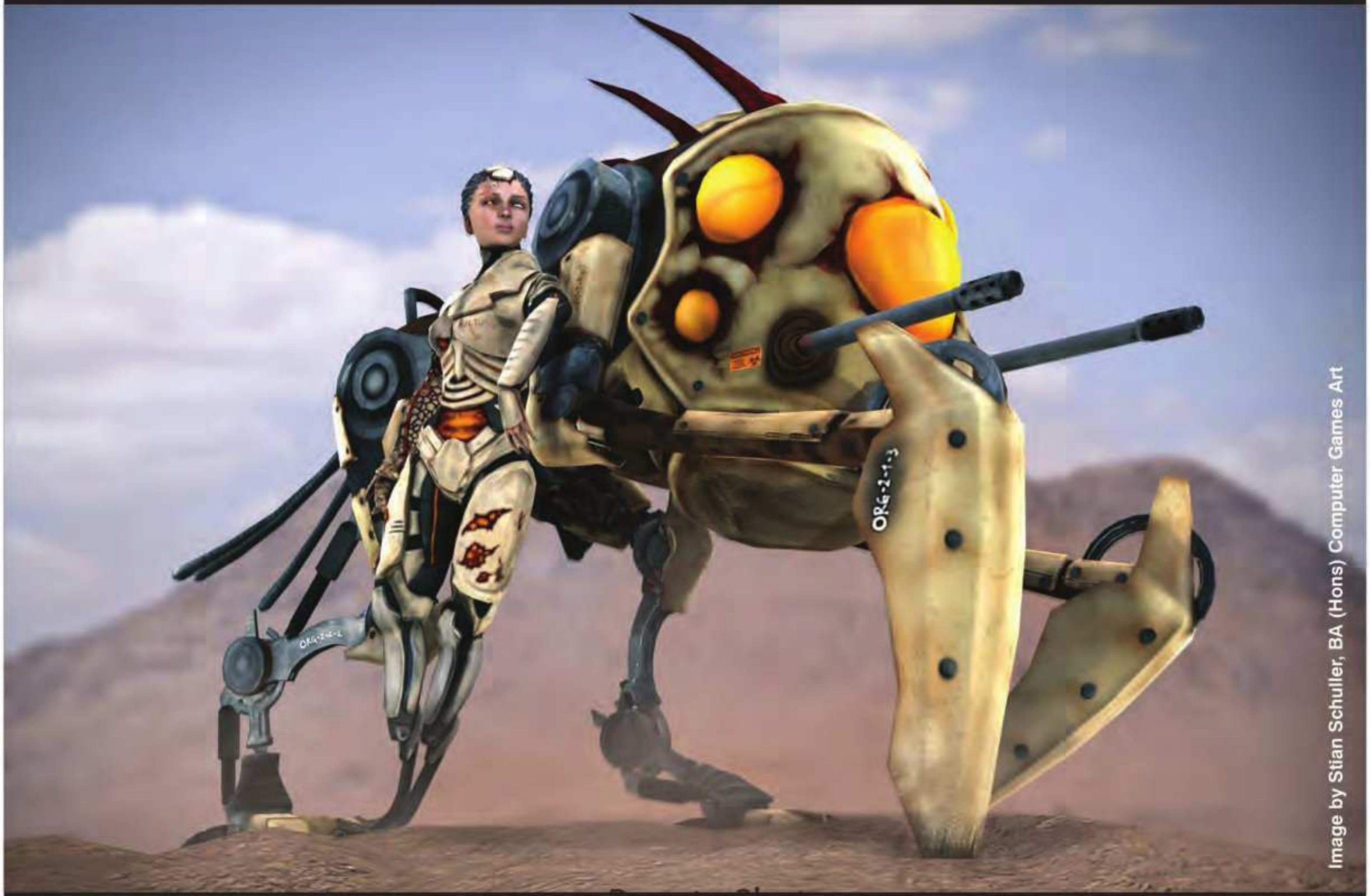

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DEVELOP DIARY

Your complete games development events calendar for the months ahead

DIARY DATES

DEVELOP AWARDS 2014
July 9th
Brighton, UK
www.developawards.com

JUNE 2014

E3 2014
June 10th to 12th
Los Angeles, USA
www.e3expo.com

CANADIAN GAMING SUMMIT 2014
June 23rd to 25th
Vancouver, Canada
www.canadiangamingsummit.com

GAME QA & LOCALISATION EUROPE
June 24th to 26th
London, UK
www.gameqaloc.com/europe

GAMELAB BARCELONA 2014
June 25th to 27th
Barcelona, Spain
www.gamelab.es/2014/en

JULY 2014

BRAINS EDEN 2014
July 4th to 7th
Cambridge, UK
www.creativefront.org/brainseden

DEVELOP CONFERENCE 2014
July 8th to 10th
Brighton, UK
www.developconference.com

CASUAL CONNECT USA 2014
July 22nd to 24th
San Francisco, USA
usa.casualconnect.org

CHINA JOY 2014
July 31st to August 3rd
Shanghai, China
en.chinajoy.net

NEXT MONTH'S ISSUE

Develop #151 – July 2014

AUDIO SPECIAL

Exploring how audio specialists create in-game sound effects, through both old school techniques and new tools.

COMMUNITY BUILDING

Loyal fans can be the biggest ambassadors of your games, so we ask leading developers to share their tips on how to establish a thriving community around your studio and its titles – even if you haven't released any yet.

HOW TO CREATE THE PERFECT DEVELOPER DIARY

Talking to studios about striking the balance when giving end users a behind-the-scenes look at how their favourite games are made. What is too little and what is too much?

GUIDE: TEXTURING SOLUTIONS

Rounding up the best texture generation and streaming tools available to developers.

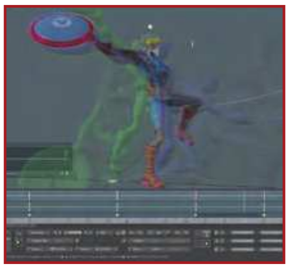
DEVELOP CONFERENCE GUIDE

We give you the lowdown on the must-see sessions and keynotes due to take place at this year's Develop Conference in Brighton.

A VIEW ON VOXELS

Develop weighs up the benefits of using a voxel-based design when creating new games, and how to make the most of this technique.

COMING SOON



DEVELOP #152
AUGUST 2014

- Animation special
- Develop Awards 2014 winners
- Motion capture and facial animation
- Guide: Modelling tools

DEVELOP #153
SEPTEMBER 2014

- Music special
- Narrative design and storyboarding
- Discoverability
- Guide: Workflows and pipelines

For editorial enquiries, please contact James.Batchelor@intentmedia.co.uk
For advertising opportunities, contact Alex.Boucher@intentmedia.co.uk

AT A GLANCE

JUNE 6TH
Murdered: Soul Suspect
Airtight's next-gen debut is about a ghostly PI solving his own murder.

JUNE 10TH
E3 2014
The future of the industry is on display at the world's biggest games trade show.

JUNE 13TH
Belle
A costume drama based on the true story of an 18th-century gentlewoman.

JUNE 21ST
World Music Day
"Girl, put your records on / tell me your favourite song," as Bailey Rae would say.

JUNE 24TH
Game QA & Localisation EU
A two-day summit dedicated to QA and localisation meetings for games.

JUNE 27TH
Grid Autosport
Codemasters' third GT competitor lines up on the starting grid in 4K.

Variable declarations

//COMMENT: BUSINESS

Land of the Setting Sun

Nick Gibson questions whether mobile games can save Japan's struggling games industry

5584
5
Menu
In 4
In 1
In 2
In 5
1343/1343

GungHo, creator of Puzzles & Dragons (above), is one of many Japanese firms with console gaming roots but a thriving mobile business

JAPANESE GAMING IS at a crossroads.

For decades, Japan was the primary or at least secondary distribution territory for all consoles but now new consoles launch weeks or even months later in Japan than in the West. Japanese-developed games used to represent five of the top ten best-selling US video games in 2003; in 2013 there was not a single one. Japanese console games sales have suffered six straight years of diminishing sales.

In contrast, Japan's mobile games market has boomed, more than doubling in size last year to over $5bn, overtaking console games sales in the process. So why is the sun setting on Japan's console games industry and can mobile really save Japanese gaming?

Japanese video games are not the only culturally Japanese products that have been sliding internationally. Anime sales domestically and in the West have plummeted over the last five years, contributing to the closure and downsizing of many major anime companies and a wide-scale retreat from international operations. This strongly suggests that international cultural tastes have moved on.

Japan appears to be increasingly losing out to other pop cultures, whether it is Chinese, Korean or Western culture that has adopted some of Japan's cultural memes. The wider malaise of Japan's crisis-hit economy and ageing, shrinking population may also be playing a role.

The Japanese games industry has its own unique problems. Their developers have historically designed games for Japanese audiences. In the 1990s, this resulted in huge but, in part, incidental international success since Japanese and Western tastes happened to be aligned strongly, helped by a lack of competition from Western games publishers.

But in the 2000s, as Western and Japanese game and platform preferences steadily diverged, Japan's developers were increasingly faced with the quandary of whether to develop for international or domestic audiences. The vast majority of them chose the latter, cutting their potential in an already declining global market.

> ***"Where the impact on console gaming in the West is debatable, mobile games has undoubtedly impacted console games spending in Japan."***

While Western developers increasingly concentrated on blockbuster releases with ever-growing budgets, Japanese console developers started to lose the skills, financial backing and ambition to compete in the modern international console games market. There are now no blockbuster releases from Japan to compare with the likes of *CoD, FIFA* and *GTA*. Sales of many of Japan's biggest franchises have collapsed in recent years with few significant new franchises being born, and certainly none that can compete in the top tier. A regular stream of leading studio closures such as Neverland, EA Japan and Game Republic complete a grim console gaming picture.

MOBILE MIGRATION

One of the causes of Japan's console games decline is mobile gaming. Where the impact of mobile gaming on core console gaming in the West is debatable, the substantially higher average spend on mobile gaming by Japanese consumers has undoubtedly impacted console games spending.

Despite its smaller population, Japan now vies with the USA for the title of largest app store territory as a result. Japan's modern mobile games industry may have been founded by non-games entrepreneurs, but it is increasingly being driven forward by console and PC games developers.

Mobile gaming incumbents GREE and DeNA have hired relentlessly from distressed console and anime studios, many of the latest blockbuster mobile games studios, such as GungHo, have their roots firmly in core games development and numerous Japanese console games development stars have now transitioned to mobile.

Although the prospects for Japan's mobile gaming companies look good, is it destined to repeat the mistakes of its console gaming peers? There are striking similarities.

The leading Japanese mobile developers are making titles primarily for Japanese gamers, with international success incidental rather than planned. Huge Japanese mobile social game networks like GREE and DeNA struggle to cope with an internationally-led platform transition from feature phones to smartphones and have enjoyed comparatively limited success outside of Japan. With surprisingly few major hits from Japanese developers in the West and the Western app store charts now increasingly dominated by games with big production values from established Western developers, several have resorted to expensive overseas acquisitions to generate international sales. Few have borne fruit so far.

Japan's booming mobile sector may be compensating for the collapse of its console games industry, but its leading companies know they have to prevent their success remaining insular and becoming cyclical.

The sun always rises again, but it may be dimmer and cooler for Japanese games companies that fail to bridge the cultural gap, cater to the larger international audience, compete effectively with an increasingly sophisticated and well-resourced Western development scene and prevent history repeating itself. ■

Nick Gibson is a director at Games Investor Consulting, which provides commercial check-ups, strategy and data to games, media and finance companies.
www.gamesinvestor.com

//COMMENT: PLATFORMS

How do you solve a problem like Xbox One?

Alex Ward imagines a stellar E3 conference that could revitalise Microsoft's new-gen console

XBOX ONE
XBOX ONE
XBOX ONE
XBOX ONE
XBOX ONE
XBOX ONE

Three Fields' Alex Ward believes that Xbox One's future rides on Microsoft hosting a strong E3 press conference (main) packed with surprise partnerships and key franchises

"XBOX LIVE IS perfect." It's Summer 2006, I'm eating curry in London and I've just heard those words for the second time in one night.

I've heard them from two really smart people. One was Larry Probst, the chairman of EA. The second was from Bing Gordon, who was one of The Two Other Most Influential People in the entire company.

Looking back, they were right. And from that night forward, I pretty much switched from being a largely PlayStation gamer to going hardcore into the world of Xbox 360.

I've got so many great Xbox memories, but when it looks like a hundred quid really does make a difference, and the most ardent Achievement hunters I know are switching to Sony, maybe something has to change. So how do you solve a problem like Xbox One?

I was daydreaming earlier of E3. It turns out it's so much fun when you don't have to go: three days of seeing new games online, and sleeping in your own bed. I'll gladly take that over jet lag, no sleep, scripted demo's every 15 minutes and barely eating anything for the entirety of the show.

Xbox One really needs a killer E3. So here's my fantasy Xbox One E3 press conference…

CALIFORMULATIONS

First up is a killer price cut. Phil Spencer takes the stage and drops the price with immediate effect. Fifty quid cheaper than PS4. Chances of this happening? Unlikely.

Then, games: news on *Halo 5*, and a Ruffian-developed *Crackdown* prequel – with the UK's Gary Liddon and Billy Thomson showing off co-op play onstage. Nice work, Agent! Then, a mind blowing demo of Black Tusk's new *Gears of War* game, with a blessing from Cliffy B. All of these look and sound amazing, and run at 1080p. Chances of this happening? Likely. Okay, probably not the *Crackdown* bit, but it doesn't stop me hoping.

Having learned the lesson about talking about Xbox Video too much, it's mentioned briefly but we're all still reeling from the games shown. Besides, we already have Netflix. Chances of this happening? Unlikely (sadly)!

Now it's time for One Last Thing, the staple of E3 conferences. To the sound of familiar Kenji Kondo tunes, Iwata and Miyamoto take the stage. The world gasps. Microsoft and Nintendo are merging! Nintendo's enviable stable of IP will now be exclusively available on MS devices going forward. And not just new titles on Xbox One, but all the N64 and SNES stuff is coming for Surface and Windows Phones. Almost instantly, Surface sells out immediately on Amazon. There's a first time for everything.

We're stunned. Miyamoto shows *Mario Kart 8* but now with 16 players online over Xbox Live. A new online-only multiplayer *Zelda* game is shown with realistic visuals. And everyone in the audience is given a free download code to the Xbox One version of the Best Game of 2013, *Super Mario 3D World* – but now it comes complete with four-player online co-op. Chances of this happening? Well, I think we all know the answer.

The truth is we've all been here before. And so has Microsoft. If any company can focus on change, iteration, improvement and quality, it's the guys in Redmond. Quality games win the audience, and Microsoft wrote the rulebook on building big first-party franchises and securing the cream of the crop from third parties. It definitely won't be the E3 I dream about – but that doesn't mean that they won't just surprise us yet. ■

Alex Ward is the co-founder of Three Fields Entertainment. He previously co-founded *Burnout* developer Criterion Games.
www.threefieldsentertainment.com

//EXTRA CONTENT ONLINE

"It was the hardest time our team ever went through, with layoffs, salary cuts, crunch and fear of not finding a new investor hanging above our heads."

Coming back from the brink
Michael Krach, Fishlabs
http://deve1op.net/1nlnzuW

"It's up to you: take all the easy parts of whatever you're doing, or you can push outwards and tackle slightly harder challenges."

Abusing your comfort zone
Craig Thomas, Dlala Studios
http://deve1op.net/1jGUwoY

"There should be no dark arts, no special sauce, no bullshit. It is about collaboration and co-operation. The relationship should grow over time."

Publishers: who needs them?
Andy Payne, Mastertronic
http://deve1op.net/1isvzfY

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//COMMENT: SERVICES

Growing a supportive mobile dev ecosystem

ARM's **Olga Kounevitch** discusses how the firm helps devs get the most out of smart devices

Olga Kounevitch (above) is director of channel marketing at ARM

IT IS UNDENIABLE that mobile gaming has taken off exponentially and its potential is enormous. While PC and console gaming is available in more affluent areas of the world, mobile gaming is the more affordable option for the vast majority of the global population.

Features once only available in premium smartphones are now trickling down into entry-level smart devices, such as the $20 Android smartphone predicted recently. These inexpensive devices are why the low and mid-range smartphone and tablet markets will more than double over the next five years, resulting in almost 2.5bn total mobile device shipments by 2018.

This represents a vast opportunity to the game developer. It is estimated that by 2016, the mobile gaming market will be worth $24bn. At the time of writing this article, the research firm SuperData released a report stating that the Chinese market alone will double to $3bn during 2014. With superb game engines such as Unity and Unreal Engine removing entry barriers, the mobile gaming market is, on the surface, an easy space to get into.

So how can you make sure your game is a hit? Well, your title has a much higher chance of success if its performance and efficiency matches those of top-tier games.

Development for mobile has some serious differences to that of PC and console. State of the art mobile devices have a theoretical maximum bandwidth of just eight to 12GB/s and a power supply limited to three to 7W (on high-end smartphones and tablets) with which they need to run the entire system-on-chip (SoC). As a comparison, the latest releases of consoles have somewhere between 80 to 100W of power to play with – and some PCs require over 300W for the GPU alone.

Despite this constraint, it is not impossible to achieve the label of console quality in mobile graphics. Games such as *Asphalt 8* and *Need for Speed: Most Wanted* look superbly good and do not overheat or drain the device straight away. All that is required is a slightly different way of thinking.

ARMED AND READY

ARM can help developers understand this way of thinking. A key player in the mobile industry since 1997, ARM landed its first mobile design win with the Nokia 6110. Today, over 50bn ARM chips have shipped and our CPUs are in over 95 per cent of all mobile phones. More recently, ARM launched its range of ARM Mali GPUs, of which the Mali-400 GPU continues to hold the title of the highest shipping GPU model in the world today.

> ***It is not impossible to achieve 'console quality' mobile graphics – it just requires a different approach.***

ARM engineers understand mobile phone technology inside out and their detailed knowledge of processor design can help developers get to the root of a whole host of application performance issues. Over the years, ARM has established a strong, global developer ecosystem, which comprises not just of the large game studios and publishers, but also small, independent developers.

Working with societies such as TIGA or Games Eden, the network for the computer games industry in the East of England, where over 18 per cent of the UK's games industry workforce is based, has helped share ARM's knowledge of mobile development within the local area. Partnerships like these ensure the tech cluster around the ARM HQ in Cambridge continues to flourish and expand the mobile gaming experience for the rest of the world.

So for those of you interested in mobile gaming, where can you go to get more information on how to develop for mobile?

When using a game engine such as Unity or Unreal Engine, there will always be extra frames per second gained by using tools such as ARM DS-5 Streamline and the Mali Graphics Debugger.

If you are building a mobile game from scratch for the first time, the OpenGL ES SDK for Android will take you step by step through the process from creating your first Android Native Application to working with advanced ASTC textures.

For an experienced developer, the Mali Developer Center has a host of deep-dive guides that cover issues such as texture compression, batching and overdraw as well as sample codes that demonstrate how to create cool effects efficiently.

Information on all of these can be found at **malideveloper.arm.com**. If you have any questions, get in touch with the ARM Developer Relations team via the ARM Connected Community.

If you are around Cambridge in July, head to the Brains Eden Gaming Festival being held at Anglia Ruskin University where we will be helping young developers make games for mobile devices. ■

ARM is sponsoring Brains Eden, which will be held in Cambridge from July 4th to 7th.
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DEVELOPMENT FEATURES, INTERVIEWS, ESSAYS & MORE

Past cover stars of Develop took part in a special roundtable discussion in London last month (above) to ponder the impact of indies, smart devices and free-to-play on the studios of today

How times have changed

To celebrate our 150th issue, we gathered some of our most notable cover stars to mull over how development has changed in the last decade and a half. **James Batchelor** caught up with the faces of Develop magazine's past

DECEMBER 2000 SAW the arrival of a brand new monthly bible for games developers. Staring from the front page, arms folded to emphasise the severity of his message, was Kuju Entertainment's Ian Baverstock with a striking claim about the future of games development. His was the first of many faces to grace the cover of *Develop*.

Last month, Baverstock – now at Tenshi Partners, a firm he founded in 2010 – and five of his fellow cover stars came to London to reflect on what has transpired since that first interview. Nearly 14 years on, the industry is a different place for developers – and certainly very different to the one Baverstock predicted in our inaugural issue.

"In 2000, I said everyone should grow up, get to be bigger and small studios are going to die," he says. "Now, I think it's pretty much the opposite – they're having a great time. They have a wonderful environment to be in, lots of innovation, they can make games for not a lot. We've got a proper indie scene."

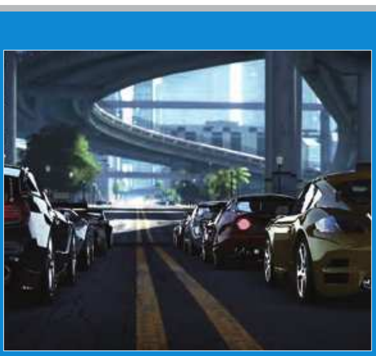
David Braben, founder of Frontier Developments, adds: "That comes from the fact that the balance of power has changed. The power has moved from publishing to content creation. We've got a lot of services that have democratised the discovery of games, where indies can sit alongside EA.

"The problem is a lot of previous developers haven't necessarily adapted to it well. And I think that's part of why we've seen the rise of the indies, although most of them are not doing very well financially."

Baverstock suggests that part of the reason some indies are struggling is many newer, smaller developers "don't want to engage with the customer or with marketing" – yet even if the number of indies decreases, there will still be "far more successful developers than there were". Meanwhile, Ninja Theory director Nina Kristensen says that they will have to "grow up and become serious developers if they really want to make it".

Kristensen also claims that as interesting and valuable as the indie scene is, there's a far more interesting space emerging between that and big budget development.

"I don't know that it has a term as such, but I'd call it independent triple-A: genuine triple-A quality, but at a much smaller



RACING SPECIAL:
Five pages dedicated to the art of developing racing games
P21

SURGING FORWARD:
We interview Wargaming about its rapid growth, and developing in Ukraine
P29

GOLLOP REBORN:
XCom creator Julian Gollop tells us why he's ready to return to his development roots
P34

Ninja Theory's Nina Kristensen says Journey (above) is a prime example of a new development sector that is emerging: independent triple-A

scale," she explains, offering seminal PSN title *Journey* as an example.

"Instead of trying to make a game with shooting, fighting, traversal, vehicles and everything that's popular, these titles just focus on one specific thing. They're much shorter games and cheaper to make. And their break-even units is around 250,000, so you don't have to sell much to start making decent money and you can focus on a very specific audience. I think that's really exciting."

The growth of this space has partially been afforded by the new sources of funding that have appeared since 2000, most notably the recent boom in crowdfunding through sites like Kickstarter and Indiegogo. With these in place, developers aren't beholden to the publishers – or "gatekeepers", as one expert put it – that controlled whether or not projects were funded ten years ago.

However, Marvelous AQL Europe CEO Harry Holmwood warns that there is a downside to this: "These new funders are starting to realise just how risky games development is – it's something we're starting to see with Kickstarter. A lot of the skill in running a games publisher is knowing when to stop a project, because the magic doesn't always happen – no matter how good the team is.

"We might start to realise what that gatekeeper sanity check – which was often unwelcome from publishers – was really for and that sometimes it was useful."

HOBBY CRAFT

Holmwood adds that a lot of the indies and new studios we see aren't interested in games development purely from a business perspective. Instead, unlike 14 years ago, they're able to afford to do it for more personal reasons.

"It's like anything that straddles pleasure and work, that people would do for fun if they weren't getting paid for it," he says. "There will always be people wanting to make games even if they're not making money out of it.

> ***"The industry has changed in positive ways for developers. It's publishers for whom the changes have gone the wrong way."***
>
> David Braben, Frontier

"Look at musicians: anyone can go out and buy a guitar, but they're not all Noel Gallagher. But a lot of people are making music, playing gigs in pubs. They're not going to hit the big time, they do it as a hobby. We might see more of a return to games development as a hobby."

TT Games' head of production Jonathan Smith agrees: "The tools and the channels of communication for sharing knowledge have evolved so you can now develop games without the massive financial outlay or the investment of becoming a business."

Holmwood adds: "It's incredible that you now have Unreal Engine, CryEngine and all these other tools available for practically nothing. Even a few years ago, these would have cost you millions of dollars. It changes the nature of who will go in to making games. Certainly, when I started, computer science was a fairly important part of making games, but now it seems like that's much less important. You can make a fantastic game and not write a line of code."

But Braben warns that this depends on the type of game. With so many indies using the same low-price tools, games end up feeling very similar to one another. Instead, studios must focus on differentiating themselves from all the other hobbyists.

Smith suggests that, while computer science and other technological know-how will help, developers' advantages need not be entirely skills-based: "Great storytellers or great artists will be able to reach a bigger audience. There is an edge in technology – I think there always will be and should be – and I think that's an edge we as people who are interested in games are excited about, but there are other edges available."

THE WAY WE WERE

All of the former cover stars present report that their studios are several times larger than they were in 2000. In the case of TT Games, there are roughly six times as many people working there now, although both budgets and operating costs have also increased significantly. There are also new avenues for developers to explore, such as digital updates of previous games and larger, richer projects far beyond what could have been accomplished at the start of the century.

"I think the industry has changed in ways that are really positive from a development point of view," says Braben. "It's the publishers for whom the changes have gone in the wrong direction."

Below, left to right: Our cover stars with their original front page appearances – Karl Jeffery of Climax, former Kuju CEO Ian Baverstock, Nina Theory's Nina Kristensen, Jonathan Smith of TT Games, Marvelous AQL's Harry Holmwood and Frontier Developments founder David Braben

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Baverstock adds: “The knowledge of how to make games, the production process and expertise, is much deeper and much wider than it was back then. Couple that with some fantastic technology that’s widely available for a low price and people can make better games more effectively with smaller teams. When you’ve got bigger teams, you can make even better games.”

There are also stronger opportunities for games that would not have fared well back when *Develop* first launched. As one panelist observes, niche games have finally become very profitable.

“As a Japanese publisher, we’re now able to bring some pretty esoteric stuff to console digitally that might sell a few tens of thousands of units,” says Holmwood. “Retail would never have touched those products before, but now we’re able to do that. It means for anyone that’s making something a little bit more off-the-wall, it all becomes feasible.”

Braben agrees, adding a more remarkable example: “If anyone would have proposed *World of Tanks* ten years earlier, saying it’s about Second World War tank battles, publishers would have said no, we want space in there, laser guns, cutscenes.”

Baverstock concurs: “Can you imagine going to a publisher with that? Never mind the fact that it’s free, that would have totally freaked them out – just the game concept would have made them show you the door.”

Climax founder Karl Jeffery says that, for all the differences compared to the industry of 2000, today’s games development scene has some noticeable similarities with a more formative period.

“It’s going back to the 8-bit days, when you used to make games on your own: art, code, everything,” he says. “That was an exciting time, especially seeing small indies, hyper-talented individuals who could do all of the development, then go and market the bloody thing and make a fortune.”

But Braben has a less nostalgic view of this era: “In 1982, we were still ruled by publishers – unless you were going to put cassettes in Jiffy bags. Publishers had such narrow views of what a game was. There were rules you had to follow: three lives, an extra life at 10,000 points, ten-minute play time – that was the one that really annoyed me, because it was all based around the arcades.”

PUBLISHER POWER

Fast-forward to today, and the dynamic between development and publishing has evolved, according to Kristensen.

“Our relationship with publishers is different,” she says. “We’re not reliant on them in the same way because we can support smaller budgets and there are alternative sources of funding that we can utilise.”

Baverstock agrees: “The power of the publishers has been eroded. Even the studios that historically have been much dependent on them have now got other sources of revenue, other routes to market and effectively more power within the ecosystem.

“In 2000, the balance of power between publisher and developer was terrible. But now it’s coming around full circle where content creators have the real power. Them and the distribution platforms, and not the guys in the middle.”

He goes on to predict that studios are likely to develop a genuine knack for marketing. Unlike the aforementioned musicians, devs will have to engage with their audience.

“That means we need more marketing in our creative industry than any of the others,” he says. “And I still think many developers are not very good at that – that’s the weak link.”

Jeffery argues the erosion of publisher power is fundamentally due to the shift

▶

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Dash for cash
It's time developers put profits first, says Harry Holmwood
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Elite
David Braben achieves Development Legend status...
EA & CRITERION GAMES ARE RECRUITING, SEE PAGE 12

WHAT DO YOU THINK?

WE ASKED MORE notable development figureheads what they thought the single biggest change to the industry has been over the past 14 years.

FIONA SPERRY
Three Fields Entertainment
I formed Criterion Games in 2000 and the only route to market was boxed retail products. I spent most of that first year having endless meetings to find a distribution partner for *Burnout*. Flash forward 14 years, and the biggest change? Digital distribution. It’s now possible to self-publish digitally across every viable games platform: from PlayStation and Xbox to Steam to iOS and Google Play. That changes everything. It’s exciting for small teams to be able to reach a global audience and to be able to bring the kind of imagination, innovation and creativity that would scare off most of the old fashioned traditional publishers.

ALICE TAYLOR *MakieLab*
Mobile has to be the obvious answer, although my brain also ran through MMOs, F2P, Unity, indies and VC funding there. All of those have had a really big impact since 2000. But it’s pretty clear that mobile has changed things in a really massive way, certainly in terms of gamut of customer. That said, I don’t think mobile is so available to everyone any more. It’s a ridiculously busy market, and dominated by squillionaires who can purchase Top Ten positioning (Big Fish spend $6m per month to stay in the Top Ten). The walls have grown high. There’ll be some crashing. VCs are pulling back. Getting attention is, as ever, immensely hard. The best should forever float to the top though: I look at Fireproof and Vlambeer for that. So inspirational it hurts.

TONY BECKWITH *Studio Gobo*
I remember in around late 2000, someone in Brighton said to me the games industry would go the way of the TV industry. I’m old enough to remember when there were only three TV channels and yet by 2000, the TV industry had fractured into hundreds of channels thanks to new platforms and business models, satisfying every kind of niche and taste. The games industry has been slightly behind TV but a similar fracturing has happened since 2000 and it continues to happen. Video games have fractured into more and more niches, exploring every type of business model and with availability across an increasing number of platforms – I even used to joke we’ll be playing games on the kitchen fridge one day. Ultimately, I believe the industry is on a path to ubiquitous gaming, where everyone on the planet games in one form or another.

BEN MURCH *Rodeo Games*
The rise of digital media. Back in the dark days, the only way to get your game out was to physically place it in the hands of the consumer. The expense made it nigh on impossible for any bedroom coders to do so. Then the internet and – more importantly... ish – Steam came along. Suddenly we didn’t have to leave our homes or wait for the post to get our gaming fix. Competitors quickly caught on, and we now find ourselves booting into a cacophony of download services every time we turn our machines on. Devs now have a many ways to release our titles, fixing one problem while creating the issue of an engorged marketplace. Both a curse and a blessing, digital media has changed the game forever.

Above: Braben and Holmwood discuss the attitude towards video games from the wider media and mainstream audiences

Below right: Minecraft was held up as a great example of the good influence games can have on children compared to other forms of media

towards digital distribution: "With boxes on shelves, someone controls that physical space. Now, it's about controlling mindshare. *Flappy Bird* is a good example – if something grabs the imagination of the public, there's no sort of traditional marketing as such. It's word of mouth, it's social media, it just flows. Whether you can engineer that, I don't know."

But Smith surmises that fan conversations is actually a form of marketing: "I don't want to talk to Bryan Cranston to enjoy *Breaking Bad* – I want to find other people watching *Breaking Bad* who I can have a conversation with that is relevant culturally. The creators aren't part of that message, and I think there's a bigger marketing performance that still has to take place, something that developers can direct, control and lead."

KNOW YOUR AUDIENCE

Increased consumer interaction with developers highlights another major change: a dramatic expansion of the overall number of people playing games. This has been driven by successes like the Wii and DS, and the rapid growth of the smartphone market.

The result, says Holmwood, is that while developers in 2000 were largely targeting one hardcore audience, today's studios are faced with two separate demographics.

"One audience cares about games," he explains. "The other sometimes plays games but actually doesn't care about them at all. These are the people that make up the 2bn smartphone owners we're all really excited about targeting. They're not the people that read *Destructoid*, download *Gone Home* and *Stanley Parable* – even those big breakout successes are relatively small numbers and they mainly appeal to people like us."

But Braben warns: "That's a dangerous assumption. True, there is a differentiation between those audiences, but people who read *Destructoid* and the like so avidly then evangelise the games to their friends, a lot of which are in the other audience."

Holmwood claims that there is still some lingering arrogance among established developers when it comes to newer platforms and markets: "The mistake that many of us have made is thinking that we know the most about games. There was an attitude a few years ago among console devs that as soon as we start making web games or 'proper' mobile games, everyone's going to prefer those because the others are not real games. And I think we were wrong.

"There's an unlearning we must go through. As soon as you're dealing with free-to-play and touch screens, it's actually a disadvantage to have expertise in building core games."

Kristensen agrees, although adds: "We can bring our knowledge and our values to that space, and I think there's real value there."

> ***"We should be much more positive about the entertainment hours we bring to the wider population."***
>
> Ian Baverstock, Tenshi Partners

Inevitably, the conversation turns to free-to-play; a business model that was nowhere near as prevalent at the turn of the millennium as it is now. And all our experts agree that the sector still holds promise.

"Games work well when they're a hobby," says Holmwood. "You can play golf for nothing, or spend tens of thousands of dollars a year on it. But everyone is still playing the same game – that's when free-to-play works well and gets away from that paywall cynicism that we see so much in Western free-to-play."

Jeffery adds: "For me it boils down to 'evil free-to-play', 'ethical free-to-play' and what's in-between. There are ways to do free-to-play where you can give lots of people a great time, and they might put a few quid in the tip jar."

Braben suggests the industry could devise a way of perhaps warning consumers where titles fit on Jeffery's scale – or, as Smith calls it, the David Braben Seal of Non-Evilness. But Kristensen is far less concerned with the supposed threat of this market.

"I don't think the 'evil' companies are going to last long because consumers are getting more intelligent," she says. "The free-to-play companies that are struggling aren't going to improve until they have much better design and better engagement with players. They're going to disappear, so I'm not super worried about them at all."

Smith agrees: "There are vulnerable groups – children are one, but there are others – and I do think we have an obligation collectively to think and care about this. Because if we don't, other people will for us."

DEVELOPER PRIDE

Holmwood describes free-to-play as "an inevitability", rather than a new invention that has "made the industry evil".

"As soon as something is digitally available, of course prices will come down to the point where zero is the optimal price point," he says.

But Braben says: "Whether we like it or not, there is a current image in media that games can be very evil and, if you read some publications, are always evil."

Fortunately, there are examples developers can be proud of – and perhaps they aren't sharing this as much as they could.

"It's fantastic that things like *Minecraft* have become so popular," says Holmwood. "I love seeing my daughter playing that because I know she's getting more from it than if she was watching YouTube or TV, or even playing a lot of games. She's creating something and that's a really positive thing."

Baverstock adds: "We should be much more positive about the entertainment hours we bring to the wider population, and let that squash the occasional rant by someone who doesn't know what they're talking about. There's inappropriate content that gets in the wrong hands across entertainment – and that's true even of books. But it doesn't stop people talking about how great movies, books or music can be. And we shouldn't let it stop us from talking about how great games can be.

"We should be talking about that positive message rather being defensive, worrying about kids playing *Call of Duty* because their parents have let them. It's not as if we as an industry have encouraged that." ■

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The race for **innovation**

Racing games have enjoyed something of a resurgence in recent times, despite being widely decried as a dying genre just a few years ago. **James Batchelor** asks veteran devs how the sector can avoid stagnation in future

IT WAS ONLY four years ago that people proclaimed racing games were dying. There were frantic attempts to shake things up, most notably with the likes of troubled action racers *Split/Second* and *Blur*, but nothing seemed to dissipate the feeling that the genre was already becoming stale.

And yet in 2014, a variety of titles are bringing something fresh to the racing space, from the anti-gravity quirks of *Mario Kart 8* to the social functionality of *Driveclub* and the open world antics of *The Crew*. But how are developers making these titles stand out when they're arguably all centred around the same concept: crossing a finish line?

"I think 'just crossing the finish line' is to the racing genre what 'just shoot the other person' is to the FPS or 'just jump from block to block' is to the platformer," argues Will Musson, producer at *The Crew* co-developer Ubisoft Reflections.

"Racing is about a sense of mastery, high-speed decision making, risk taking, perfect execution, and putting in the work to be better than the next racer. I believe that gives plenty of room for innovation."

Eutechnyx's marketing manager Ashley Westgate adds: "Compared to other genres, driving itself is a known quantity. The majority of people drive, or at least have been driven in a car, and so have an understanding about a driving experience. Not deviating from this expectation means that the core mechanics across sim-based racing games will always be similar, making wholesale change hard.

> ***"Just because the goal's to get from A to B, it doesn't mean you can't experiment with how and why."***
>
> Ashley Westgate, Eutechnyx

"That isn't to say innovation is impossible. Just because the objective is to get from A to B, it doesn't mean you can't experiment with the how and the why. Across the genre we've seen a wealth of interesting innovations: dynamically changing tracks, narratives, objectives, social features and meta games to make the journey more interesting."

Codemasters' chief games designer James Nicholls says the company looks at every possible aspect of both the race itself and everything around it to find new ways to excite fans of the genre and newcomers.

"Looking at the drivers, how can we make the competition more personal?" he says. "How can we make AI opponents more human? How can we create narrative and drama around each race?

"We're also continually working on the camera, force feedback and audio to tell you what a driver would be feeling. There's so much we could do given the time and raw processing power that we've not even touched yet."

WACKY RACES

Plenty of companies are attempting new things with their games, although perhaps not all are as high profile as the serious simulation titles now on shelves.

Sony is hoping to usher in a new era for racing with the social features of Driveclub (main), from the creators of the action-focused MotorStorm series (below)

Top-to-bottom: Codemasters' James Nicholls, Milestone's Michele Caletti and Wipeout creator Nick Burcombe say there are still plenty of ways to evolve the racing genre

"We look across the various digital stores at some of the vehicle-based gaming that isn't 'cross the line' – it's pretty amazing," says Nick Burcombe, creator of *Wipeout* and now CEO of Playrise Digital.

"I wouldn't have thought parking would be an enjoyable activity for a game, but there's certainly a skill-based game in there and it requires fidelity and control. Extreme taxiing? Crushing zombies before fuel runs out? Mission-based chases, endless racers, abstract racers, the list goes on.

"All of them are filed under 'racing' but none of them are just 'cross the finish line'. Even when you look at some of the more unusual challenges in *Gran Turismo*, like smashing cones and eco-driving, there's variety of gameplay even in the sim market."

However, Nicholls warns that developers could be in danger of trying too hard to bring something new to racing.

"It would be easy to fall into the trap of trying to create complex race rules with over-the-top scoring systems and actually failing to move forward with the actual game mechanics," he says. "You need a very clear, focused direction on the experience you're creating, or you'll end up with a mountain of conflicting features that don't complement each other."

Nicholls' comments bring to mind some of the scepticism that accompanies the unveiling of new racing games with unexpected mechanics – particularly when it comes to more outlandish franchises such as *Mario Kart*. The latest title's anti-gravity courses were initially dismissed by some as gimmicks, and there were even people that doubted the impact of social features in *Driveclub* or the introduction of an open world to *Forza Horizon*. Each, it can be argued, are attempts to overhaul their franchise or the genre without stepping too far out of gamers' comfort zones, but are these new features under-appreciated?

"I don't think gimmicks are the solution for any genre – there is only ever short-term gain to be had from them," says Evolution's Paul Rustchynsky, game director of PlayStation 4 title *Driveclub*.

"But neither do I think these examples are gimmicks. Most are interesting, vibrant new features that are well integrated into the entire experience, that can change the entire dynamic of play. We just don't do a good job of explaining to players why such features are transformative and why they're a great reason to check out the driving genre again."

KEEPING IT REAL

As has been mentioned, the simulation market dominated by *Forza* and *Gran Turismo* is far more limited in how it can keep itself fresh – flying cars are unlikely to fit seamlessly into either series. Instead, the constant push for authenticity is what drives progression in these franchises.

"Motorsports continue to push their boundaries, so as racing game developers we need to do the same," says Eutechnyx's Westgate. "That means keeping pace with the changes and innovations within the sport. In *NASCAR '14*, we patched in the new rules, keeping true to the sport. In *Auto Club Revolution*, we worked closely with BMW on their 1 Series M Coupé, adding it in-game to support the real car's launch. Keeping in sync with the auto industry, launching cars, rule changes, tracks and race series in tune with real world events is key to keeping our genre fresh."

> ***"We don't do a good job of explaining to players why new features are transformative to the driving genre."***
>
> Paul Rustchynsky, Evolution

Ubisoft Reflections' Musson says that making players feel immersed in the action has been a long-running challenge for developers: "Transferring the visceral physical sensation of piloting a vehicle over into a stationary 2D monitor and controller living room setup will always be tough. In that respect, the big leaps forward came early but there is a massive amount of work still needed to convey this kind of experience.

"Delivering the adrenaline rush of racing via a PC or console setup will still require leaps in innovation – and that's before you think of all the tech around it: Driver AI, damage systems, sound systems, number of active racers and so on."

Michele Caletti, development director at *MotoGP* and *WRC* studio Milestone, agrees: "Involvement is everything in a racing game. It might seem obvious but the amount of buzz they're building recently tells us that people are liking it a lot. Plus Oculus Rift and Project Morpheus – these new devices are a great opportunity to create even more heart-pounding simulations for petrolheads."

It could be argued that improvements to simulation games can only be on a small scale from this point forward, refining almost unnoticeable details rather than overhauling the mechanics. But Burcombe argues that there's still a long way for the genre to go.

"I'd like to believe sim racing could only be exhausted of innovation once we can create an experience so convincing on the senses, it's as good as racing in the real world – apart from the risk of death, of course," he says.

"If we reach a point where you can virtually sit in the cockpit of Lewis Hamilton's F1 car and then race on sub-millimeter scanned 3D circuits, with advanced AI, photo-real graphical detail – both inside and outside the cockpit – and emerge from the experience exhilarated, exhausted, but safe, then I think we will have delivered on the dream of all aspiring sim-racing fans."

THE RACE OF YOUR LIFE

Many of our experts refer to the narrative of a race. Rather than literally writing storylines for the next *Forza*, instead they refer to the unique encounters and moments that players can carve for themselves while on the track. And if these can remain unscripted, it will be all the better.

"There's as much thrill in pulling off an impossibly tight overtake, nailing the perfect

drift, squeezing every ounce of grip from tyres, or nursing a damaged car home as there is in any explosive action game setpiece – perhaps more so as it's a fully dynamic experience rather than being pre-baked by the hands of a designer," says Codemasters' senior executive producer Clive Moody.

"The drivers interplay on the track, realistic 'human' AI behaviours, improved damage modelling and environmental effects that go beyond just the visuals and have a tangible effect on how the narrative of a race unfolds."

That said, Evolution Studios has already proved that well-designed setpieces can bring a fresh experience to racing games.

Rustchynsky says: "With *MotorStorm Apocalypse*, we focused on the large-scale spectacle and really pushed the boundaries of environmental destruction.

"We could have just tightened up the handling and added more intricate details as a sequel to *Pacific Rift*, but instead we changed the formula and shook up the series to provide a fresh take on the visceral driving action. And I see no reason why we won't see more of this within the racing genre this generation."

The improved capabilities of the new consoles also opens fresh possibilities for racing developers, as does increasingly complex smartphone and tablet hardware.

But Torsten Reil, CEO of *CSR Racing* owner NaturalMotion, says this is just the start: "We believe there is a massive opportunity for great leaps in technology that will accelerate the realism around cars and we already strive to have them play a bigger role in the game rather than just a vehicle for manoeuvring around the track."

Caletti predicts: "The next big thing in racing games will probably be a believable procedural destruction – that can be quite a technical and visual showcase. Not all games can or will be able to afford it, and I'm not talking about technical boundaries: you can easily imagine that not all licensors – car and bike manufacturers, championship licence holders – are so happy to heavily dig on that."

> ***There's as much thrill in pulling off an impossibly tight overtake than in any action setpiece pre-baked by a designer.***
>
> Clive Moody, Codemasters

As with many genres, developers have spent decades searching for new ways to get players interested in racing games. Some ideas fail and fade away, others can be revived years later. The important thing, says Burcombe, is to keep pushing forward.

"I saw the trailer for *Mario Kart 8* and thought 'how we've come full circle'," he says. "It's been well reported that the first *Mario Kart* was a huge inspiration for *Wipeout,* so it's great to see anti-grav Mario. No doubt they'd probably be keener to reference *F-Zero* than *Wipeout*, but it's nice to see the anti-grav mechanic in there nonetheless. I think the trick is to keep trying new things."

Reil agrees: "It's hard to innovate on racing games if you only focus on the car going around the track. If we focus on creating compelling consumer experiences that go beyond a traditional approach to the racing category, we can deliver an experience that people will want to partake in throughout the day."

DRIVING FORWARD

It's also important to keep in mind why the racing genre felt like it was becoming stale just a few years ago. For some, a big contributing factor was the lack of new contenders and the death of old favourites – most notably Bizarre's *Project Gotham* series. It can be tough to see new ideas such as *Blur* and *Split/Second* being rejected by the media and consumers alike, but it shouldn't deter devs from at least attempting to reinvent the wheel.

"You really need competition within the sector, which in turn means you need enough developers being in a position to try new things," Nicholls concludes.

"If everyone tries to pile in on making variations on a driving simulator, you'll end up in an arms race with everyone fighting over the same audience. However, if enough developers can try out different expressions of racing as a broad genre, there'll be a much lower chance of stagnation.

"I believe that racing is a very primal thing. It's part of human nature and it's also very compatible with competitive play. Children will have running races with each other long before they've mastered kicking a ball. As long as you keep that at your core, there are a huge number of ways to try different angles, which would definitely stave off genre fatigue." ■

Top-to-bottom: Evolution's Paul Rustchynsky, Ubisoft Reflections' Will Musson and NaturalMotion's Torsten Reil ponder the progress the genre has made since the troubled action racer Split/Second: Velocity (main)

We’re in this together

Codemasters’ senior executive producer **Clive Moody** reveals how to turn community collision into collaboration

Codemasters’ Clive Moody (above) says many of the features in Grid Autosport (main) have been developed with constant feedback from the studio’s fans

BACK IN THE day, when I first embarked on my career in video games, the relationship with gamers felt so very different.

This was before the predominance of the net and social media with its multitude of games-related websites, forums and feeds. It was a time when print magazines ruled. Critical success was measured by just a small handful of review scores and commercial success was underpinned by this, a cover-mounted demo and word of mouth. Customer services and the occasional hand-written fan letter pretty much summed up the extent of two-way conversation between devs and gamers.

Today, the gamers’ voice is more prevalent than ever and I’d argue as important to your games success as a smart marketing campaign. With a crowded marketplace and so many potential distractions, buying decisions are won or lost not just by final review scores, but long before. Features and previews are picked over, analysed and critiqued by the vocal core gaming community – not just what has been shown but also speculation as to what has not. That’s a pretty scary prospect if you’re a developer, right? Well, it doesn’t have to be.

Our industry is littered with examples of games design colliding with community; *Mass Effect 3*’s ending, changes and removed features from *Eve Online* and – from my own experience – the removal of the cockpit camera from *Grid 2*. The viral nature of social media makes for a near impossible position to defend, and as a wise man once said to me: “Don’t fight the internet. You’ll never win”.

What all these examples have in common is a resultant doubling down of efforts to engage with their relative communities. The problem being that each was looking to cure the problem after the damage has been done.

Being burned once is one too many times, so the Codemasters Racing Studios approach over the last 12 months on *Grid Autosport* has been one of collaboration and two-way conversation at every stage of development.

> ***“Your community is an incredibly powerful, complimentary and often viral messaging force.”***
>
> Clive Moody, Codemasters

Our vision, concept, features, content and key aspects, such as car handling, have all been validated by the community. In many cases this meant sharing information behind closed doors before implementation on a particular aspect had even commenced.

FAN INFLUENCE

This is something many of you have probably been doing for years. Similarly there will be readers who have never taken this approach. I urge you to embrace it. It’s a surprising, enlightening and liberating experience.

It’s surprising in that the community really doesn’t want to design your game for you, but does want feel part of the development process and understand why and how decisions get made. Their opinions and ideas can guide and inspire, but managed properly your game won’t become a homogenised ‘design by committee’ experience.

It’s enlightening just how much you can learn about their playing habits. Knowing when players turned to our games rather than our competitors was bordering on revelatory and confirmed that our approach was not only correct, but had its own place in the market.

And it’s liberating because rather than worrying about your audience loving the final product, you already have confidence in your vision. Sure, you might obsess over decisions that affect gameplay, but you have a wealth of feedback and data to help you make an informed decision.

As gamers’ voices can be heard more than ever before, your collaborators also become a mouthpiece to the world. The very best will evangelise and support you. Set against the pervasiveness of naysayers and negativity on the internet, your community is an incredibly powerful, complimentary and viral messaging force. If they feel connected to and love what you are building, your fans will be your ambassadors. Who wouldn’t want that?

Just one more benefit to call out. Developers love working in open-minded, forward-thinking and, of course, successful teams. A big part of the thrill of making games is getting them into players’ hands and seeing their reaction. A positive feedback loop early and often lifts then team and gives them belief they will be making people happy, plus with the constantly competitive employment market helps attract fresh talent to your team.

In essence, don’t collide, collaborate. ■

Virtual racing: the reality

Experienced racing developer Eutechnyx is currently experimenting with VR and how it can enhance the genre. Marketing manager **Ashley Westgate** tells us more about its plans for future titles and possibilities beyond games

LIKE A LOT of industries, we're excited by the potential of virtual reality headsets to give players new experiences and even more engagement with the games we make.

The platform is relevant across our business, from the virtual showroom technology in ZeroLight to our free-to-play online racing game *Auto Club Revolution*. We see the technology as an opportunity to bring the experience to the user or player, and not the other way round.

In *ACR*, Oculus Rift is helping to give the player a stronger presence within the experience of the game. Ultimately, it creates a greater sense of immersion and speed. It gives the player the feeling of actually being in the car, being able to look about at the interior. Pair this with a racing seat and it becomes a true experience of the car and the brand – these are exciting for any racing game player.

For the committed or aspiring racer, there are a number of other benefits to the technology as well, and one of the things we are most excited about is the simple mechanics that Oculus offers. Being able to look into a corner or see another player's position on the track with a simple turn of the head – rather than having to alter your view with the press of a button – is great and helps to push the experience that much further. It's a great tool players can use when trying to position themselves against rival racers with much more precision, letting them see things that would normally be in the blind spot created by a screen set-up or lost in clunky HUD view changes.

REALITY CHECK

It's not all straightforward, though. There are a number of challenges to overcome before it can become a widely accepted platform. It's absolutely key to have a high and consistent framerate – if not, then the brain isn't fooled and you'll experience motion sickness.

There are functional issues to consider as well. For example, when wearing the headset, you can't see the physical controls that you're racing the car with, be that a game pad, keyboard or a wheel. This can be a little disorientating for both inexperienced players and pros – we all lose our bearings on the controls every now and then. We're exploring ways to overcome this with intuitive controls and intelligent design and there will no doubt be a number of solutions to try.

From a design and user experience point of view, there's also the fairly basic question of when is the user wearing the headset and when are they not? If they are only using the headset for the race itself, how do you manage the time where the player has to essentially switch screens? If they're using it all the time what impact does this have on user interface, on navigating menus? These aren't insurmountable but they are all considerations that have to be taken into account.

Fundamentally, VR has to be a viable market: there has to be enough units sold to create an audience that can support extra development time, costs and content. But we're well aware that to create that audience the technology needs to be affordable, and that affordability needs to be paired with good quality and compelling content for VR. It's a chicken and egg situation, but it takes some innovative and forward-thinking companies to create that early content – and this is what we're doing with *Auto Club Revolution*.

At a technical level, we know that there is a roadmap to increase the resolution and framerate of the headsets, and we'd like to see that get up to 4K in the long term. We'll get there, and with each incremental improvement and with quality content it will become more and more compelling to the public and the audience will be created. ■

Oculus
World Cup

Eutechnyx's Ashley Westgate (above) says VR tech such as the Oculus Rift (left) can offer a greater sense of immersion in racing games

> ***Being able to see another player's position with a simple turn of the head helps push the experience.***
>
> Ashley Westgate, Eutechnyx

VIRTUAL SHOWROOMS

EUTECHNYX'S ASHLEY WESTGATE explains how the firm is using its experience with racing games to branch into the motor industry with its virtual showroom initiative ZeroLight.

"ZeroLight is the perfect example of using our expertise and technology from our racing titles to innovate into new areas," he says. "Due to the variations available for cars, customers rarely see the actual model they're buying before they pick up the keys. Our virtual showroom provides a solution, allowing them to see, customise and interact with any configuration of a car as part of their purchasing journey – all in real-time 3D.

"Virtual reality is one of the ways that we can take that experience to the next level, really letting customers experience a car inside and out before purchasing, and the amount of space needed is minimal – vital in a showroom with limited real-estate.

"It's a customer experience so strong that it gives automotive brands and manufacturers a genuinely compelling way to sell products in the digital age."

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What Second Screens Really Mean
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David Varela and Rob Barnes, The Project Factory

Why User Experience Design is a Must for Games?
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Bringing Substance and Deeper Experiences to Casual Gamers
Peter Molyneuax and Jack Attridge, 22cans

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David Braben, Frontier

Super Sleep Fighter II: Hyper Edition
Gavin Strange, Aardman Studios

The You: Designing Tearaway Around the Player
Rex Crowle, Media Molecule

Environment Art Direction Theory and its Application to Virtual Reality
Jason Hickey, Sony Entertainment Europe

Rendering Fields of Grass Using DirectX 11
Richard Kettlewell, Codemasters

Game AI vs Real AI
Richard Evans, Versu

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Simon Byron, Premier PR

Indie Spirit Under Control
Roberta Lucca, Bossa Studios and Siobhan Reddy, Media Molecule

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Rob Clarke, Curve Digital

GAMESbrief and Bartle: A Conversation About the Future of Free-to-Play
Nicholas Lovell, GamesBrief interviews Richard Bartle

Audio Keynote
Garry Taylor, Sony Computer Entertainment.

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Jessica Curry and Dan Pinchbeck, The Chinese Room

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Surging forward

Wargaming is mobilising its resources on the fresh battlegrounds of console, mobile and eSports. **Aaron Lee** travelled to Paris to discover how the MMO giant is maturing

World of Tanks: Blitz (main) is taking Wargaming's 20th century tank warfare to new platforms and an entirely new audience of players

WARGAMING'S FRÉDÉRIC MENOU and his staff have been getting funny looks from their new neighbours at the prestigious Tour Horizons office building in Paris.

"It's a very funny thing to come into a corporate building with a lot of people in suits and bring 171 Wargamers here," he chuckles, casually dressed as he is in a navy blue polo shirt and jeans. "Everybody's looking at us like, 'who are they?'"

What the suit-and-ties from the likes of pharmaceutical company Roche and hospitality corporation Sodexo probably aren't aware of is the $474.93m in revenue, according to SuperData, that the *World of Tanks* developer made last year. A sum that's enabled the rapidly expanding firm to relocate its European headquarters to this 18-storey building, which was designed by French architect Jean Nouvel and resides in the Boulogne-Billancourt, on a site formerly occupied by Renault's car production plants.

"We had this tremendous success and then we had to run after it. We had to grow very quickly," Menou, Wargaming's managing director of EMEA & NA, explains during *Develop*'s visit to the studio.

Catching up with this "exponential growth" has been a big challenge, but Menou says a mixture of Wargaming's family culture and a do-it-yourself mentality has allowed it to not only learn from its mistakes, but take charge of opportunities that its free-to-play military MMO was never even intended for.

WAR ROOMS

There were fewer than 50 staff when Wargaming first opened its European division in France in 2011. Escaping the cramped conditions of their old office was a key reason for the move, Menou says, and its 171 staff now occupy an entire floor of the three-tiered building at Horizons.

"We built this family as closely as we could. We like to work with each other and we're convinced that liking the people you work with is key to the future the company and for the motivation of everybody in the long term," he says. "We believe that being on the same floor and seeing each other every day, and having a mingling area where people can talk to each other and play pool helps a lot. And the door to my office is always open."

> ***"We had this tremendous success and then we had to run after it. We had to grow very quickly."***
>
> Frédéric Menou, Wargaming

Wargaming had moved in only a week prior to *Develop*'s visit – the first publication worldwide to do so. But even at this stage, wandering around the open-plan studio, there was a sense that communication and collaboration are both encouraged by the space. Floor-to-ceiling windows treat the eye to some striking views of West Paris. Whiteboards dotted about the workspace allow staff to scrawl ideas and pictures. The meeting rooms have sci-fi-style, full colour displays showing who is present in them and when they are next free. Military-themed décor – ammo crates, sandbags, cameo netting – adds to the considerable paraphernalia strewn across each desk.

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CARTONS
7 F256-209
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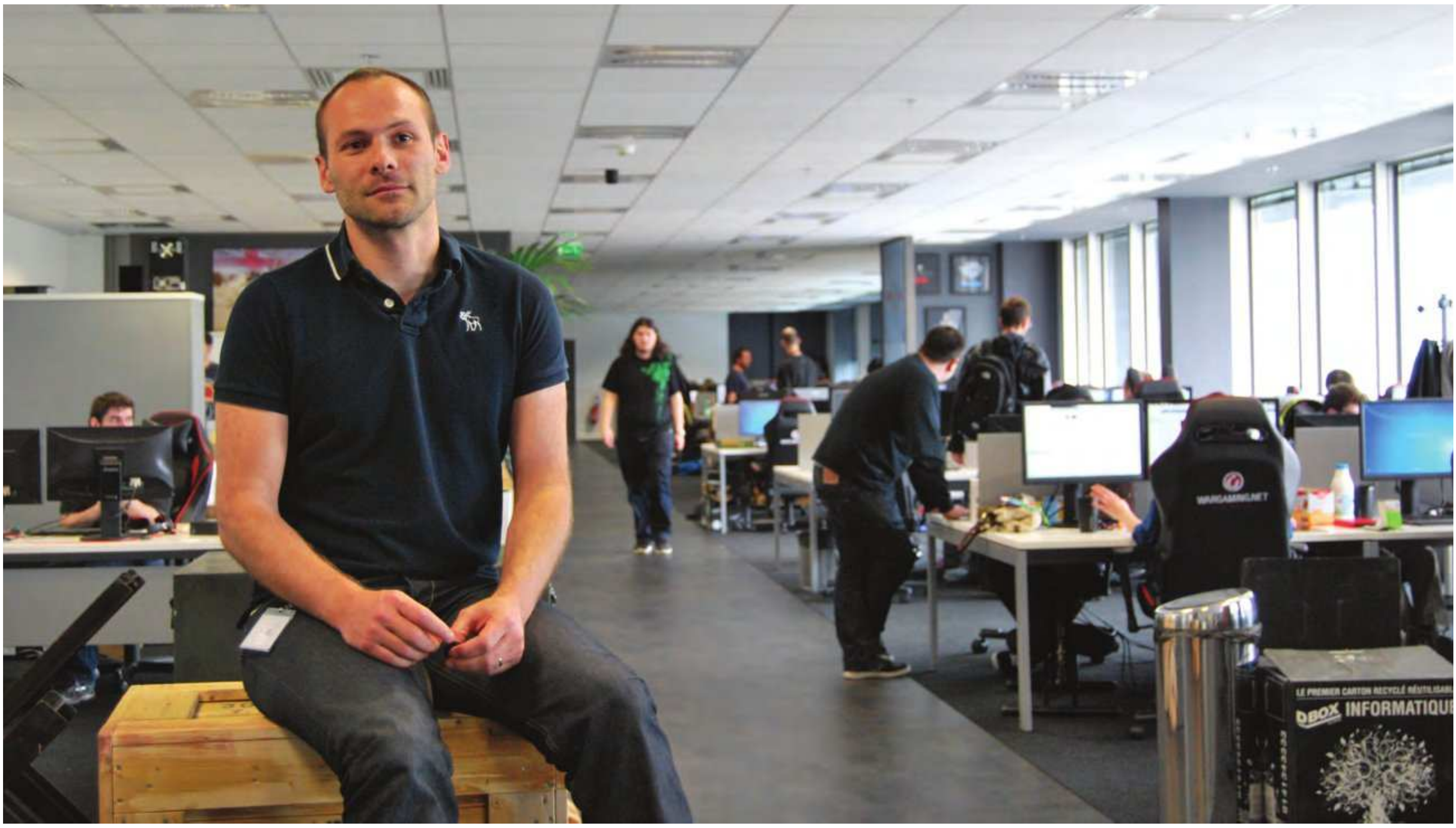

Wargaming's Frédéric Menou (above) has been with the military strategy games maker since it opened its European office in July 2011

The European HQ is responsible for publishing Wargaming's titles across the continent. Staff work on projects that have left the concept stage of development, providing publishing feedback and figuring out marketing strategies for the various markets. And with over 60 million registered *WoT* players, community management is also a big part of what goes on here.

Together with his original staff, the family culture that Menou has built up has so far attracted 21 nationalities to the studio.

"It is very important to keep that family feeling," he says. "And I have to admit it's cheating a bit when you're trying to build that, because there are a lot of people coming from other countries. They don't have they're family or friends next to them, so they need to rebuild something here.

"The best part of it is, no matter where you're coming from, you're Wargaming first, and then you're part of your community, which helps build that family feeling. But it's hard work."

Ironically, French nationals are actually in the minority at the studio. But Menou says it would actually be "a mistake to have more French staff than Germans or Polish, where our strongest communities are". He also feels that having its European HQ in Paris, as opposed to London or Brussels, gives the MMO maker a solid advantage.

"Now with Ubisoft, Blizzard and Wargaming, there's kind of a publishing hub in Paris. I actually find it very healthy. When you're in a country and you know there's no other options open to you besides moving to another country, then it becomes difficult for employees and for companies."

> ***"To be honest, I'm more worried about the World Cup this summer than any of our other competitors."***
>
> Frédéric Menou, Wargaming

Situating its mainland HQ in Blizzard's back garden was another unconventional move by a company whose rise doesn't fit the prescribed MMO developer mould.

At a time when multiplayer gaming was becoming more about twitch reactions or grinding, the slower-paced tension of World of Tanks seemed destined to be confined to a niche market. Four years later and that prediction has been detonated.

BATTLING FOR SPORT

Wargaming has begun expanding its military MMO series to new platforms, such as Xbox 360 and tablet computers, and for the last two years it has been working two new additions to the *World of* family, *World of Warplanes* and *World of Warships*.

The developer started its own eSports tournament last year with more than 40,000 teams playing competitively, and, based on its reception, has elected to throw $10m at promoting its eSports efforts in 2014.

"I think for all of us it's clear that eSports is very important," Menou says when we asked if eSports has become a primary pillar for Wargaming's business. For us it wasn't in the beginning, to be honest. It just became a need when the players started to ask us.

"Then we started doing the Wargaming League, with the regional finals and then the grand final. We saw that it did work. And I have to be honest, we were kind of surprised at the success of it because we hadn't thought that *WoT* was made for eSports.

"But looking at the success of it, this is showing a different way of playing. These players are really amazing; the skill and strategy level is very high. We saw an entertaining match during the grand final. We also saw a lot of things we can improve. That generated great excitement both for players and for us. I think it was very energising internally for us, and for players."

ROLLING OUT ON MOBILE

eSports has turned out to be a big boon. But in the last 12 months, Wargaming has also undertaken the herculean feat of forging new ground for itself on mobile and console.

Experimentation is the one constant. Menou is open about the fact that *Warplanes*, the company's aerial combat MMO, released in November 2013, hasn't exactly taken off, having attracted some four million users since launch – a modest amount compared to its land-based sibling, but enough to show that there is an audience for such a game experience. Menou says the team is already trying to figure out how it can make *Warplanes* more enticing. But in the meantime, there's plenty on its plate.

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BETTER TO FIGHT
NO GOOD DECISION

Take *World of Tanks: Xbox 360 Edition*, the first free-to-play title of its kind to appear on Xbox Live. This was the premier title from Wargaming West (formerly Day 1 Studios), which the company acquired in January 2013. Menou says the biggest challenge here was learning how a "fully online company" could make its F2P offering attractive to console gamers that are used to premium titles.

Another example, *World of Tanks: Blitz*, is taking the game to iOS and Android. Currently undergoing beta testing, the game shrinks the action down to seven-on-seven battles that can be tackled in shorter bursts. Fully 3D with an intuitive UI, it's already looking like it will become a hit with the commuter who's partial to armoured warfare.

For most studios, tackling such a broad array of projects would be daunting and certainly not something many would launch into without prior experience. So while the company has a dedicated mobile team and has hired talent specifically for mobile development, Menou says that Wargaming's nature is to learn by doing: "I think it's in the DNA of company. Because that's what we did for *World of Tanks*.

"If we were to look at the books for *World of Tanks*, I don't think there are a lot of chapters that would have helped us. So we had to learn by ourselves. Make some mistakes, learn and correct them."

Of course, as Menou acknowledges, Wargaming isn't shy of hiring or buying the talent it needs in order to achieve its goals. In the last two years, it has acquired middleware provider BigWorld, Gas Powered Games and the aforementioned Day 1.

When asked whether the company could have got where it is today if it hadn't brought more people into the Wargaming fold, Menou told *Develop*: "I don't think so. With the line-up and the schedules we have, I don't think we could have achieved them without bringing a lot of people on board.

"The vision from Victor [Kislyi, Wargaming CEO] was to go somewhere that was very clearly defined for us, and that was *World of Tanks* on every platform, and developing the trilogy of *World of* titles as fast a possible."

COMPETING AGAINST ITSELF

Thanks to pursuing growth areas, such as mobile, and the surprise bounty of its eSports league, Wargaming has a lot to smile about.

Menou says its new European office is a sign that the company is "maturing". What's more, he feels the strange reactions that he and his staff have been getting from their suit-wearing neighbours are actually "really cool, because I think that's kind of what happened when we entered in the industry".

Following the success of *World of Tanks*, rival titles such as *War Thunder* have been launched in an attempt to hijack players' appetite for military MMOs. Menou, however, is not scared by the competition. Not when the continent's biggest sporting event is mere weeks away and he's got a studio to run.

"I think we're our own competitor," he says. "And most of the time it's just how good are we going to be in improving our project. Because releasing a product is just one part of the contest. It's then about how you support your player and how you update your game. How fast can you answer those questions?

"This is our real challenge. We've had competition from a lot of different publishers in free-to-play for a while. This is healthy. It forces us to challenge ourselves.

"But, to be honest, I'm more worried about the World Cup this summer than any of our other competitors." ■

www.wargaming.net

DEVELOPING A WAR GAME IN A WARZONE

THE UNSTABLE SITUATION in Ukraine is an issue that Wargaming is paying more attention to than most, as it has a Kiev studio. The development office is home to around 200 staff, who are currently working on updates to *World of Warplanes*.

Kiev (*below*) lies in Western Ukraine, outside of the hot zones, where clashes between the nation's independent supporters and pro-Russian separatists have been occurring. But with news reports about a lack of food in some cities and the fighting spreading beyond the east of the country, we were curious if Wargaming has had to adopt any special measures.

"Wargaming is a very international company," says Menou when we ask him about the situation. "We don't have political position as Wargaming. I don't want to suggest that we don't care about what's happening in the world, but it really hasn't impacted the functioning we have there.

"It's not that we don't care, we're following it very closely. In case something should happen, we're already ready to move our staff and take good care of them."

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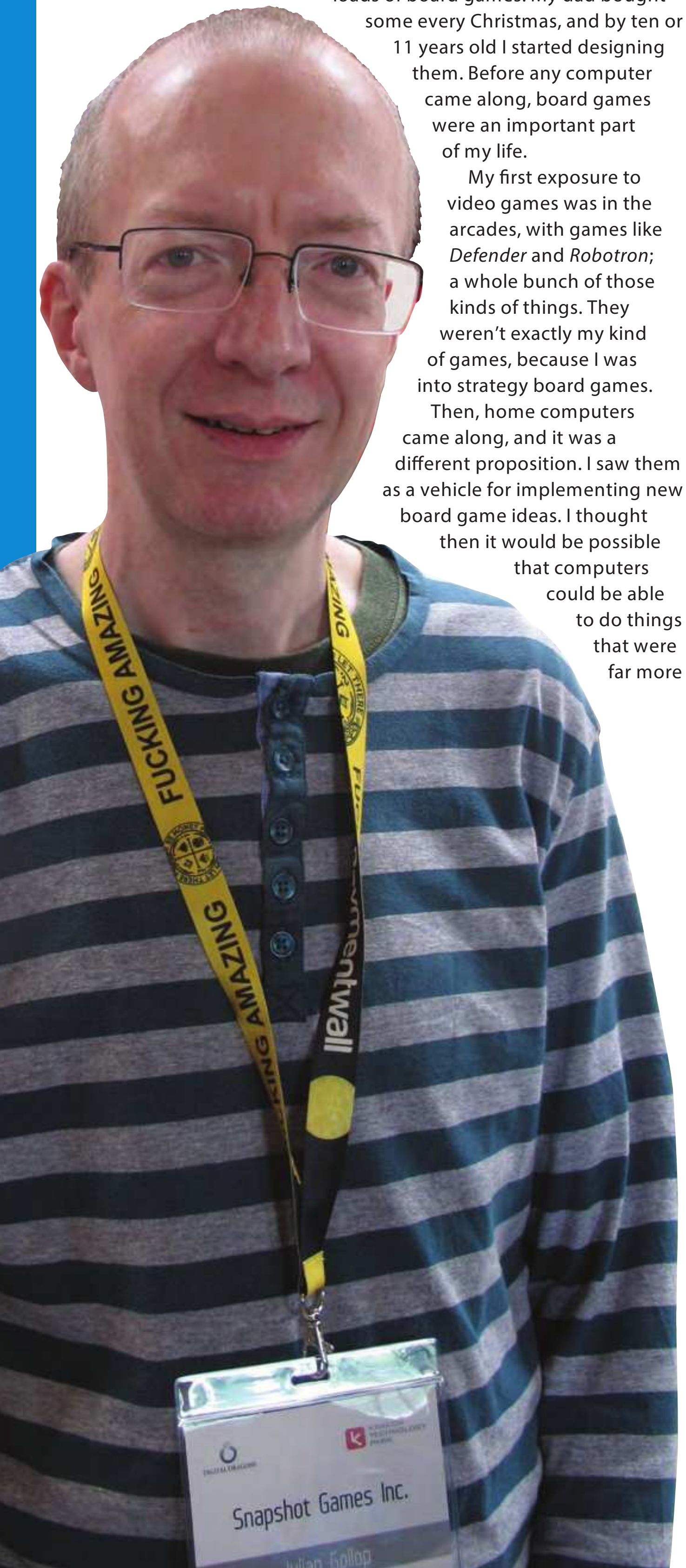
Gollop reborn

XCom series creator Julian Gollop has made something of a return to his roots after bumping heads with big publishers. He tells **Will Freeman** about that journey, and shares his secrets to Kickstarter success



Gollop (below) says responding to backers and their reactions is the best way to drive your Kickstarter campaign

Where did your interest in video games begin, before it was a creative endeavour for you?

My first interest was in board games. They were a big focus in my family. Dad was into card games, and every Christmas we played loads of board games. My dad bought some every Christmas, and by ten or 11 years old I started designing them. Before any computer came along, board games were an important part of my life.

My first exposure to video games was in the arcades, with games like *Defender* and *Robotron*; a whole bunch of those kinds of things. They weren't exactly my kind of games, because I was into strategy board games. Then, home computers came along, and it was a different proposition. I saw them as a vehicle for implementing new board game ideas. I thought then it would be possible that computers could be able to do things that were far more awesome than board games. Introducing things like new line-of-sight mechanics and all that kind of stuff; it felt like more of a natural progression for me to get into than the arcade stuff. I wanted to implement my ideas for board games with computers. My first interest wasn't even playing computer games. I wanted to make them.

So that would have been the early 1980s, right? What hardware were you using?

It was. I started with a ZX81, which I bought from a friend at school in 1982. I got my 48k Spectrum when I left school in 1983, and I started programming on it straight away. I programmed my first game on it the instant that I got it.

> ***My first interest wasn't even playing games. I wanted to make them.***
>
> Julian Gollop

Did you not have any interest in playing other computer games back then?

I did buy and play other titles when I got my Spectrum, but I bought it to make a game on, and that was it.

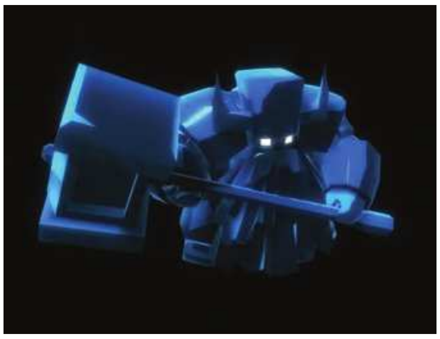
What about learning coding back then? Are you entirely self-taught?

Yes. I learned BASIC programming and Assembly language programming on my 48k Spectrum. In fact, I'd learned a bit on the ZX81 as well. I did make games with the ZX81, with my 16k RAM pack. I stuck it onto a big board of wood to prevent the RAM pack wobble crashing the thing. I had big problems with that though, with loading and saving games. That just irritated me. It wasn't good enough for me to make games on. The 48k Spectrum was the machine I needed. It was a mean machine and, I think, the main impetuous behind that boom in bedroom coders.

When did your transition from hobbyist coder to professional developer happen?

There wasn't really a transition. The first game on my 48k Spectrum got a full release. It was published. That was a game called *Nebula*. I made it in BASIC and I programmed it in two or three months over the summer in 1983. It was published by Red Shift, which was a group of friends of mine that got together to publish games. I just went straight into making games for release. There was no distinction between hobbyist and professional for me then.

Over three decades after *Nebula,* you're still making games. What keeps you engaged and enthusiastic about games after all these years?



Today, it's really the diversity. The array of genres, of business models, of audiences and so on is amazing. What's happening now is phenomenal and really exciting to me. I honestly don't think I've ever been more excited about the industry than I am now.

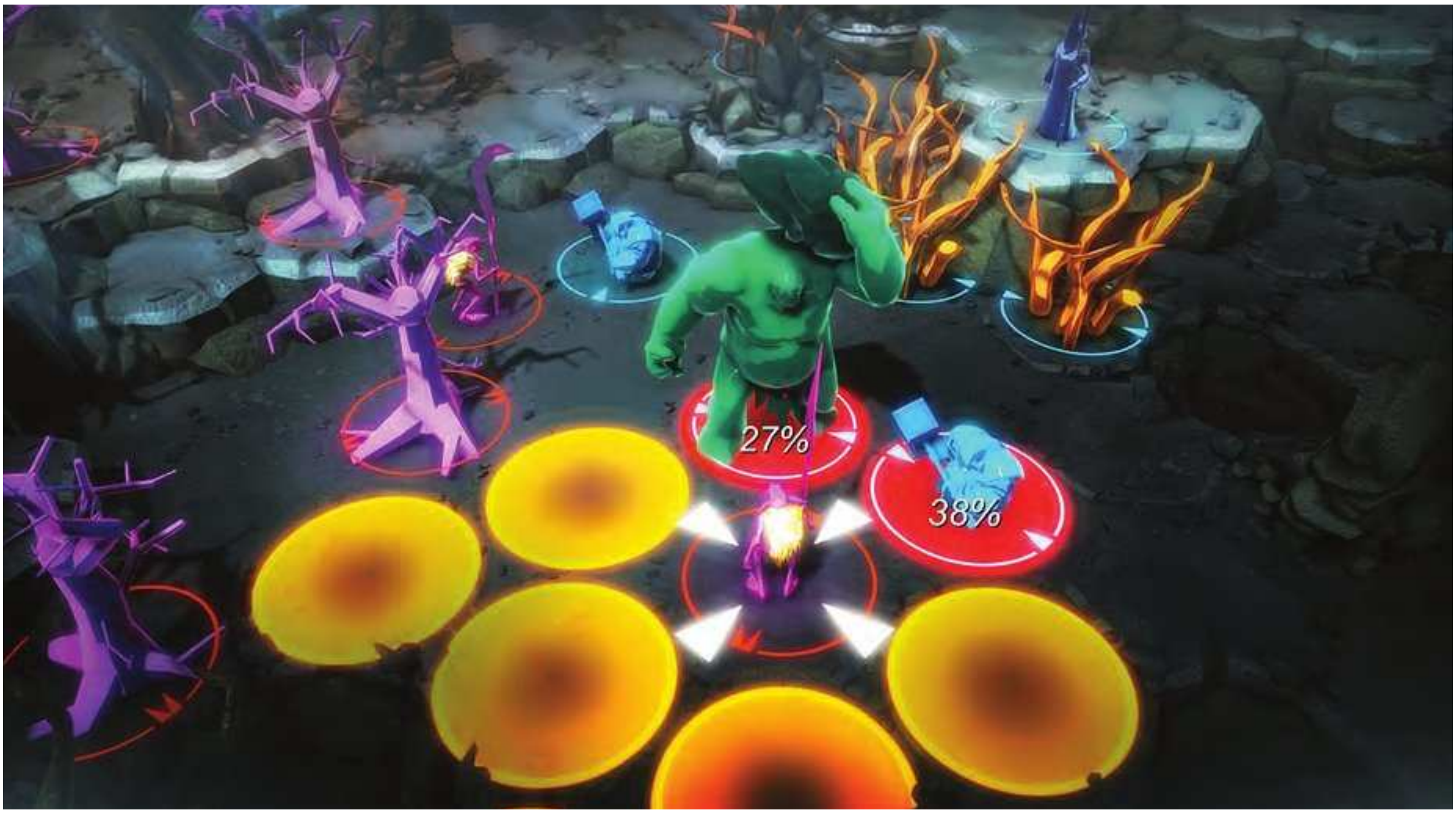
Things are innovating and changing in games so much. We're on an up. There have been some real down phases in the industry over the years. There was the late '90s and early 2000s when the so-called 'death of PC gaming' was upon us. Then, there was the rapid increases in development costs and team sizes, when it seemed harder to make a living for indie developers.

But today, it feels very different, and very exciting. There will always be tough periods, of course, because there's so much going on, and so many games. There's only so much people can pay attention to.

I like the fact there is that audience diversification today, and that it keeps happening. That means niches – and I guess I'm making niche strategy games – can still exist and hopefully do well. That alone is great; a good thing for games today. Games need that explosion of diversity to continue.

You seem very optimistic about games, but what about where you've struggled over time? When has it been tougher for you?

Working with big publishers. That was difficult for me. I learned a lot working with publishers, working with Ubisoft. But it wasn't a very creative time, and I didn't feel I was achieving anything. It was difficult to get



YouTubers and Reddit were more effective at spreading the word of Chaos: Reborn (above) than most of the traditional gaming press

things done. The biggest problem for me was that you are working to please a number of people in publishing organisations, and you don't have that direct relationship with the consumer, which I was used to with my early games. I expanded the idea through my game *Laser Squad Nemesis*, as we had a lot of contact with the community of players that developed around it. I really enjoyed that.

I felt that was totally missing at big publishers. Trying to please marketing people and all the different stakeholders in a project can mean you're pulled in all kinds of different directions. For me, being a producer as well as a game designer in that situation, I was always trying to manage a lot of people's expectations.

Then there were projects getting cancelled. Even I worked on projects that I cancelled, because they weren't going anywhere. I wish I'd cancelled some of them sooner.

Working within a big publisher seems an extremely inefficient way to make games. There was always a lot of work done on a lot of things that should have been canned, and a lot of promising things that got squashed for, in my opinion, completely invalid reasons.

You get a lot of that going on, and for me I wanted to go back to that direct relationship with the players of my style of game. That's what I want to be doing.

Now, you've just finished a very successful crowdfunding project for *Chaos: Reborn*, and you're using Unity for the game. Does that feel like the kind of thing you wanted to get back to, in terms of direct player contact and creativity?

Is it a return to my early days? Yes and no.

Yes, in that it's a return to me creating the vision for the game, without interference from other people with other ideas about that vision. Of course, there is still an element of needing other people to buy into my idea, but it's very different from working with a publisher where you have a vision for your game, and then it gets altered by people, mutated into some horrible, mutant, bastard offspring of a ginger demon.

But there are improvements in terms of where I am, too. I guess back in the early days of my career, I had a very limited pool of people to test my games. It was my friends and family. Now, with the internet you can contact thousands of people who want to try out your games. That's certainly better than it was, and is very exciting to me.

> ***"Working for a publisher, your vision gets altered into some horrible, mutant offspring."***
>
> Julian Gollop

So I am getting back once again to a place where I am the proprietor of a vision, but now I can expose my vision and game's design to many more players, and very early on.

During my *Chaos: Reborn* Kickstarter I found that side of things very rewarding, and very stimulating.

That campaign did very well there, hitting $210,854 when the target was $180,000. What did you learn from this?

What I kind of knew before was how important PR and getting the campaign exposed would be. I learned a lot about what works and what doesn't during the course of the Kickstarter campaign, and that was a real eye-opener.

Initially, my focus was on the traditional gaming press. And I got a lot of coverage which I worked hard for.

But then, I switched focus to try and get more YouTubers on board. I had a playable demo so I got them to play the game with me. I also managed to get Ken Levine on board to try it out, and Jake Solomon, who helped me with some celebrity games.

At that point, when we made that change in strategy, some of my backers were already YouTubers and they were doing well, making videos of the game and showing on their channels. So we began targeting more YouTubers, and even when they weren't the biggest channels, I think it made a difference. The YouTubers seemed to help a lot.

In terms of the traditional gaming media, I also learned during the campaign about who and what made a difference. *Rock, Paper, Shotgun* was really up there.

Reddit had a real impact too, I put real effort in there. I did a Reddit 'Ask Me Anything', and that did seem to give a noticeable boost.

Overall, I knew how important PR was about getting your game out there to people, but I guess now I realise how fundamental it has to be to your strategy to maintain the level of awareness needed.

Releasing the prototype to the public really mattered too. I was really nervous about that, because I had a rough prototype, but it had a lot missing, with bog-standard Unity GUI and so on. But the players responded well. Some became ambassadors for the campaign. My backers became my PR guys, and it was great.

I could have planned more in advance, but doing a Kickstarter is about trying to respond to what's going on as best you can, while the campaign is still active. I went through fear and terror and excitement, and had to change the way I was doing things as I did them. And then went through having to spend a day twiddling my thumbs while I wondered what the hell I was supposed to be doing next.

It was a real rollercoaster ride. I enjoyed most of it, and was very worried for some of it, but it did work out well in the end. ■

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MOVERS AND SHAKERS:
New hires for Bossa, Marmalade, Three Fields and more
P38

RECRUITER HOT SEAT:
Epic Games' Tim Johnson on its worldwide openings
P39

GET THAT JOB:
Codemasters' Amandine Mairiaux on careers in localisation
P40

Can top talent really be replaced?

A string of senior departures at Naughty Dog puts the Uncharted maker in a taxing situation no studio wants to be in: replacing top talent in the midst of development

Amy Hennig's (left) departure from Naughty Dog sparked controversy over the state of the studio and what will happen to its projects

by Aaron Lee

NAUGHTY DOG'S RECENT loss of top talent has been widely reported.

Whatever the circumstances surrounding the departure of Amy Hennig and other senior team leaders at the *Uncharted* maker, the need to replace key staff in the midst of new projects is a situation no development team wants to be in.

Barry Meade, a former level designer on the *Burnout* series and now commercial director of Fireproof Studios, says its important to remember a games team is made of individuals, but functions like an ecosystem.

"If the overall team is solid, top talent leaving can mean very little disruption, especially if the team is making something they are already familiar with," he told *Develop*. "That's not quite so applicable where you get multiple top people leaving – obviously that can be a sign of deeper rot."

Martin Hollis, a former Rare developer and co-creator of the N64 classic *GoldenEye*, says: "Top talent leaving a studio can be devastating or inconsequential depending on many factors. If the people leaving put their whole selves into a team and a company culture, that will have a large effect. Every manager hopes that individuals are replaceable, but every leader knows this is not the whole truth."

Kevin Corti, founder of microstudio Evil27, had two senior staff leave and said it was "exceptionally hard" to replace talent of that calibre quickly.

"Hiring a top developer can easily take three months and can be significant drain on management time as well as unplanned recruitment costs. Even more significant is the impact it has on the junior team members in terms of their morale and capability," Corti explained.

On the other hand, Jennifer Schneidereit, game creator and co-founder of Nyamyam, said that in the best cases the remaining staff will be promoted to take over the roles, and that the change itself can be an opportunity to switch things up and experiment with new ways of doing things.

"It can be creatively exhausting having to work on a single game IP for the course of several games. One or two top talents leaving a studio on good terms is nothing too worrying in my opinion. A great game is, after all, made by a team and many of them are invisible, yet their work tremendously impacts the resulting game," she said.

Taking a pragmatic view on the issue, Meade added: "It's rare that studios keep top talent permanently. The industry is too big with too many options for people at the top of their game. Sometimes they manage to keep them by using 'golden handcuffs' but that's rare. Where top people do manage to be retained, it's usually for their own reasons and not the company's – they want to live local, have kids in school and so on."

Hollis added: "The best people need to be given challenge, fair reward and autonomy. Without challenges which feel like challenges, people become unsatisfied and realise that excitement and new frontiers are elsewhere." ■

MOVERS AND SHAKERS

This month: Bossa Studios, Marmalade, Three Fields, Keywords and Square Enix

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Video Games Recruitment

BOSSA HIRES BLACKLIST DEV

BOSSA STUDIOS ■ Independent developer Bossa has hired **ROB MACKENZIE** as a senior game designer. He will be working on multiple projects across the studio. Mackenzie returns to the UK after leading game design on *Splinter Cell: Blacklist* at Ubisoft Toronto.

"Moving to Bossa was a rare case of an offer I couldn't refuse: an opportunity to work on smaller, more focused and personal games at one of the most forward-thinking studios in the UK right now," he told *Develop*.

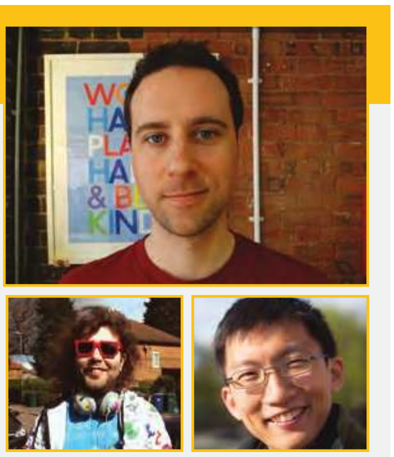
He has spent time at Codemasters, Climax, Lionhead Studios and Kuju. Recent hires by the London studio also include **OLIVER HINDLE** as digital marketing assistant and **HERB LIU** as an associate producer.

Hindle, 24, caught the attention of the studio after submitting a YouTube application video, which has had thousands of views.

"I've always been a fan of Bossa, so when I saw they had a job advertised in my field of expertise, I applied instantly. I didn't have an up-to-date CV, so Googled 'How to rap' and applied via a rap music video. It got 36,000 views and I got my dream job," Hindle said.

A Stanford graduate in Economics, Liu will use his management skills to lead new projects at Bossa.

"Coming from a background in tech and education, and as a lifelong gamer, I felt it was a no-brainer when the opportunity to work at Bossa came up. It's been a total blast working with so many talented people," said Liu.



Clockwise from top: Mackenzie, Liu and Hindle

MARMALADE ■ **KARLA SUTHERLAND** has joined the expanding team at Marmalade as a producer and will manage the external development of several major titles for the games making arm of the SDK technology company.

"Marmalade has got a really exciting portfolio of products lined up this year. I am really stoked to be involved at such an exciting time for the company," she said.

Sutherland has been in the games industry for over 13 years, having worked with Sony and Disney. Her credits include work on *Burnout Revenge*, and *Heavenly Sword*.

THREE FIELDS ■ The new studio set up by Alex Ward and Fiona Sperry, Three Fields Entertainment, has hired former Criterion chief technology officer **PAUL ROSS**.

Ross has been appointed CTO and a director of the studio, which opened its doors earlier this year.

Ross wants Three Fields to be "a space where the world's top talent can develop game-changing experiences".

A long-time Criterion developer, Ross' credits include many titles in the *Burnout* and *Need for Speed* series.

The company is now comprised wholly of ten ex-Criterion staff, and is aiming to expand further this year.

KEYWORDS ■ **DAVE LAWSON** has joined Keywords Studios as commercial manager, following the QA firm's acquisition of Babel earlier this year.

He will be responsible for all back-end sales activity and marketing for all of Keywords' studios globally.

"I am very excited to have joined Keywords at a point where the company is rapidly expanding, and I look forward to contributing to such a successful team," Lawson told *Develop*.

"With the latest acquisition of Binari Sonori, this puts us in a position to be the biggest and strongest provider of QA and localisation in the world."

SQUARE ENIX ■ The European arm of Square Enix has appointed **PHIL ELLIOT** as project leader for its new development initiative, Collective.

Elliot is overseeing strategy and development, communications, outreach and developer relations.

"Collective's a project I pitched internally about a year ago, and I'm really proud to be leading it," he told *Develop*. "It's been a great start to the year so far, a lot of people are being very kind in what they're saying.

"And with crowdfunding campaigns starting very soon, I'm excited to see how far we can help teams find the funding they need."

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RECRUITER **HOT** SEAT

Epic Games' **Tim Johnson** on what the Unreal Engine maker and its worldwide studios can offer you

BIO
Name: Tim Johnson
Title: Director of Recruiting
Developer: Epic Games
Country: USA
www.epicgames.com

> ***"We are never satisfied with the status quo, and are always looking to improve."***
> Tim Johnson, Epic

What differentiates Epic Games from other developers?
When you come to Epic, you not only influence our next big games, but you also contribute to world-class technology that is used by developers throughout the industry.

We recently released the Unreal Engine 4 tools and C++ source code on accessible terms, so it is an incredibly exciting time for our team as well as the community.

While the Unreal Engine is still used for big-budget games, it's now accessible to anyone who wants to check it out. The rapid pace at which the technology is evolving and the rate at which developers are sharing awesome new projects is astonishing.

How many staff are you currently looking to take on?
We are currently looking to fill more than 50 unique positions, with many requiring multiple people. We plan to add about 100 people to our teams this year. Our studio locations include Cary, North Carolina (Epic's headquarters); Seattle, Washington; Salt Lake City, Utah; Warsaw, Poland; Seoul, Korea; and Yokohama, Japan.

In the UK, specifically, our lead engine programmer James Golding now works on-site at Pitbull Studio, a UE4-exclusive shop with offices in Sunderland, Leamington Spa and Guildford. Our primary point of contact for developers in Europe, territory manager Mike Gamble, has always been based in the UK. We have an open headcount which we are looking to fill locally, and encourage anyone interested to check out our opportunities at **www.epicgames.com/careers**.

What perks are available to staff working at your studio?
The biggest benefit to being a part of Epic is the opportunity to work with a talented and passionate team on interesting challenges. We are never satisfied with the status quo, and are always looking to improve upon our achievements. This applies to taking on new genres and types of games – our work on *Fortnite* being one example – to jumping into a welcoming subscription service with Unreal Engine 4.

What should aspiring devs do with their CV to get to an interview?
Build something Unreal. But seriously, give us a preview of your potential by making something cool. We have a long history of hiring from the community all the way back to the early *Unreal Tournament* mod days. In fact, quite a few of our original *Unreal Tournament* level builders are still here at Epic. If you impress us with your abilities to create amazing content, we will want to talk to you.

Who is the best interviewee you have ever had and how did they impress you?
Two words: Mind control.

And who was the worst?
There once was a guy who snacked on raw bologna, which was diced into little chunks and jostled about freely in his pockets. Talk about an awkward handshake.

What advice would you give for a successful interview at Epic?
Prepare yourself well before showing up for an interview, and be ready to talk with anyone. Don't be nervous, as the company has invited you to the studio because they think, and probably hope, you will be a good fit for the position. Just be yourself and answer questions honestly.

If Epic has recruited internationally, what is the process like?
We have recruited talent internationally. The best advice from Epic's perspective is to be prepared to make an international move and to understand there are potential immigration hurdles to jump through. Do your best to provide as much information as necessary to help with the immigration process.

How have your recruitment needs changed at your studio?
In making the move from traditional console model to service-based games and technology, our needs have changed quite a bit. We continue to recruit world-class engine developers, but now are also looking for online engineers, systems designers, web engineers and so on. As a result, a much broader spectrum of positions are now opening.

Why should developers join a studio like Epic when indie and self-publishing have become so much more accessible?
We remain an independent studio with independent roots. Fortunately, Epic is agile and innovative, with the financial stability that equips our team to take smart risks.

We are making games for the player and technology for the developer, supported by the philosophy that if we give value, then we will get value back. As such, we are happily committed to providing our community with the content, tools and experiences they desire.

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GET THAT JOB

Development specialists offer advice on how you can bag that career leap

THIS MONTH: ASSISTANT LOCALISATION MANAGER

CODEMASTERS' AMANDINE MAIRIAUX discusses the key skills needed for her role as an assistant localisation manager at the studio behind racing titles such as *Dirt*, *F1* and *Grid*.

What is your job role?
I coordinate the translation of all Codemasters assets – everything from in-game text and speech to manuals and promotional materials – into several languages.

I liaise every day with external translation vendors in many countries and our internal teams in Birmingham and Southam to make it happen.

How would someone become an assistant localisation manager?
There are several ways: the 'classical' path, which I took, is to get a degree in translation first. Then, get a junior position in a localisation department for a developer or a translation agency specialising in video games.

What qualifications and/or experience do you need?
You need to be at least bilingual, have good communication skills, but also be good at multitasking among other things. The best experience you can get is by being a localisation intern for developers while you're still studying.

It builds up your network of contacts and you get to learn a lot about video games localisation, which is quite a specific domain.

> ***"I liaise every day with external translation vendors in many countries and our teams."***
>
> Amandine Mairiaux, Codemasters

If you're interviewing someone to join your team, what do you look for?
Someone with an attention to detail, multilingual, flexible, but who is also sociable as you need to liaise with many people. Being a gamer is not essential, but it does help when anticipating/discussing issues.

What opportunities are there for career progression?
You can either progress vertically and manage a localisation department. Or horizontally by joining a development team after a few years as an associate producer, for example. You then become the point of contact for localisation but on the studio side.

Why choose to follow a career in your field?
If you're passionate about languages, games and a little crazy, then look no further and hop on the localisation train.
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If you've got job advice to share, email **Aaron.Lee@intentmedia.co.uk**

Employee HOT SEAT

Andrew Hague guides you through the ins and outs of recruitment at Leamington Spa games studio, Kwalee

What do you do at your studio?
At Kwalee, my role is really wide reaching; almost as wide as my job title. Primarily I am responsible for the software developers on the games teams, but I am still very hands on. I'm often within a team helping code various odds and ends. I love programming, so I love a job where I still get to shift bits of data as well as bits of paper.

How did you get your current job?
After Blitz Games Studios closed down, I was looking for a job in the same area. I contacted everyone I knew across the industry. Among others, David Darling, my old boss from when I worked at Codemasters 18 years ago, kindly contacted me and the rest is history. This role was the one that had the most to offer in terms of my career objectives.

> ***"Everything developed at Kwalee is a big contribution to its success."***

What perks are available to those working at the studio?
Unlike larger companies, everything developed at Kwalee is a big contribution to its success. For me this is a real perk, because too often employees can get lost in the hierarchy. The company offers private medical care, private pension, life assurance, profit sharing and/or royalties. We have quarterly team building events, in-house training sessions and a few of us go out to schools and colleges to give careers talks. We have free fruit too, but we're in the town centre so tuck is only a one-minute walk away.

What is the recruitment process like at your studio?
We only look at candidates that we can feel will deliver a first-class performance, qualified by a proven track record. We're keen to recruit people with an outstanding gameography, especially programmers. Candidates at interview are given a short aptitude test, a face-to-face meeting with the team lead for whom they will work and then a longer technical test within the team area. The technical test depends on the discipline so these vary quite a lot. Finally, the company directors will meet with the very best candidates before they are considered for employment.

What was your own interview like?
My interview here was very similar to a lot of other interviews I've attended. However, it was in a different setting. The Kwalee office has only recently acquired a meeting room so my first interview was at a local coffee shop. After that, I had face-to-face meetings with the company directors and the teams to see if I would fit in and whether I had the skills needed.

Describe what the atmosphere is like at your studio.
Kwalee is a small company, so it is a lot of fun. We have a chill-out zone with games consoles that are used daily. There is a relaxed atmosphere, but that is balanced by developers who are driven and highly motivated to succeed. We need to get the very best results first time and everyone must work effectively. We have highly ambitious and really talented people who make that happen.

Name: Andrew Hague
Title: Senior VP of Software Engineering
Developer: Kwalee
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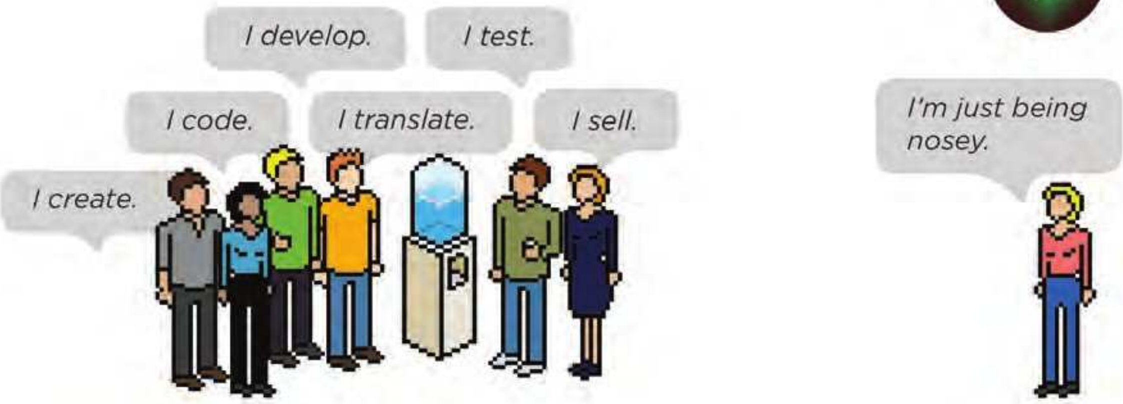
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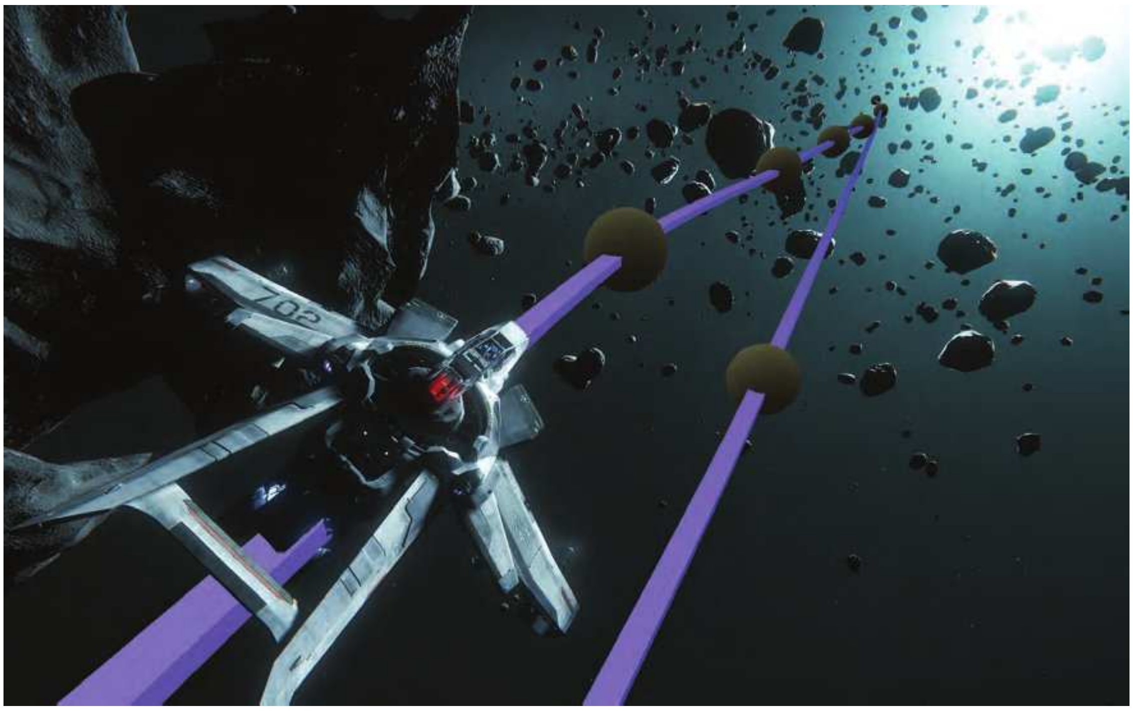
Next-gen smarts

More realistic character behaviour has been touted as a true next-gen feature for the PS4 and Xbox One. **Craig Chapple** asks how AI is developing on new consoles and PC, and where it can go now at a time when players expectations are sky high



Star Citizen (main) will take place in a vast 3D universe, and dynamic AI will play a big part in bringing to life its combat environments

AS THE LEAP in graphical capabilities becomes less noticeable on new consoles, developers are looking for other methods of standing out and dazzling players.

One of the biggest advancements touted in new generation consoles is in artificial intelligence. With the vastly increased amount of RAM and the touted capabilities of the cloud, AI is becoming a new turn-to for developers offering more immersive, believable experiences.

And it's no surprise to see AI taking an increasingly central role in new games. The hardcore players are looking for ever-stauncher challenges – just take *Dark Souls* for instance – while story-driven games such as *The Last of Us* and *BioShock Infinite* require clever AI and pathfinding to generate an emotional connection and ensure players aren't simply infuriated by the presence of another character. Gone should be the days where your AI-controlled companion steps in front of your gunfire, standing and smiling oblivious as enemies swoop in.

AI TAKING CENTRE STAGE

Gilles Mazars, CTO of the Masa Group, which last year released its new AI middleware Masa Life, believes clever AI can be a game-selling feature this generation.

"Contrary to previous generations, the new generation of consoles are not really marketed on rendering, as there is not actually a big leap forward compared to the previous generation," says Mazars.

"AI has been presented as a possible 'winner' for the additional power the PS4 and Xbox One bring to the table. We believe AI can benefit from this in certain areas such as environmental queries (raycasting, for example) that will be offloadable to GPUs and crowds of NPCs. However, more horsepower doesn't mean better AI per se.

"The recent spotlight on AI due to this new generation of machines will encourage games developers to spend more time on character behaviour. We might see better characters because the focus has drifted away from rendering."

Matthew Jack, CEO and lead architect of Moon Collider, a Scottish firm that is powering the AI behind space sim and crowdfunding sensation *Star Citizen* with its Kythera tech, agrees that new advances in hardware is helping artificial intelligence reach new levels, and believes the big

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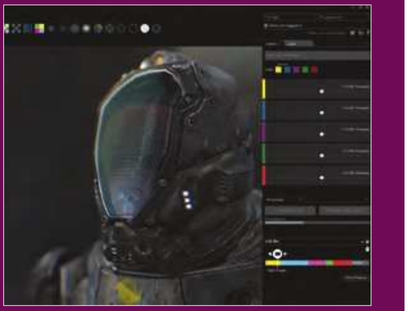
GUIDE: GRAPHICS AND RENDERING
A handy guide to 12 of the most proficient graphics tools around
P48



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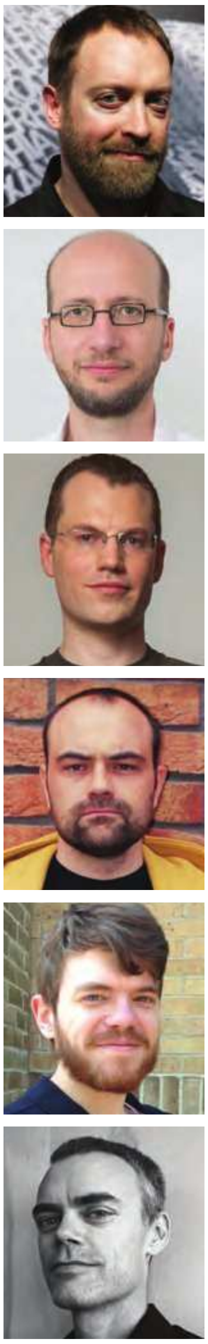


Top-to-bottom: Dan Greenawalt of Turn 10, Gilles Mazers of Masa Life, Matthew Jack of Moon Collider, Mieszko Zielinski of Epic, Mike Cook of Angelina and William Klein of Rival Theory

NO JOBS TODAY
THE EARLY BIRD CATCHETH THE WORM

enabling factor in particular is more and faster RAM.

"This helps us manage a larger number of AI characters and background creatures and to maintain more detailed information about each of them," he says.

"It also allows us to store more information about the game world, so that AIs can reason about bigger worlds and respond to them more accurately.

"There is also potential to make use of more CPU cores, especially on PC. AI is very suitable for offloading onto other cores, so it's easier for AI to take advantage of this than, say, graphics."

ARTIFICIAL CHANGES?

However, Epic senior programmer Mieszko Zielinski says that, in his opinion, developers have already reached the maximum level of AI smartness in the first and third-person shooter genres, and further raising the bar could ruin the fun.

He does say though that there is potential in using the cloud to offload AI computation power and, thus, improve intelligence in other genres, such as strategy or racing (see 'Invasion of the car snatchers'), but believes this will require adjustments to the way AI is handled by game code.

"Cloud AI computations are a perfect fit for calculation-heavy strategy games. I can also imagine harnessing all that additional computation power to simulate rich worlds to a high detail for RPGs," he explains.

> ***"The biggest challenge for us is adapting how we think of AI and how we use it to drive experiences."***
>
> William Klein, Rival Theory

"There's a lot that could be done with cloud computing provided one doesn't mind the additional preparation and data handling burden that comes with it."

Rival Theory CEO William Klein, whose firm offers free AI toolset Rain for creating AI-based characters in Unity, says it isn't clear yet how useful such computations could be, but admits it does have potential.

"Offloading AI to an external server is important if the problem your AI is solving requires lots of computation or large data sets. It isn't clear that those are bottlenecks for better AI in games," he states.

"We see the cloud opportunity as having more to do with connectivity and distribution. For example, our Sentio product makes heavy use of Microsoft's cloud for managing AI lifetimes across games."

A NEXT-GEN LEAP

Given that many games already offer seemingly intelligent foes and companions, will any advances in AI be clearly noticeable to players? After all, unlike graphics, the changes will not jump out to players in an instant.

Jack says the biggest changes will be in how AI handles dynamic and physical worlds, allowing both enemies and player companions to handle changes to the environment created by the player, allowing for destructible environments, for example.

"When you blow a hole in a wall or push a boulder, AI systems have to either recalculate their map of that area to respond, or do some very expensive querying of their surroundings all the time," states Jack. "Either way, this was usually too expensive for last-gen consoles, but now it's a pretty obvious use of the new power.

"Another leap we've just begun to see is to high-quality companion characters. These have been a long time coming. But games like *The Last of Us* and *BioShock Infinite* are

INVASION OF THE CAR SNATCHERS

MICROSOFT IS USING a combination of its next-gen hardware and its cloud technology to power a new AI feature called Drivatar. Used by Turn 10 in *Forza 5*, the system is designed to emulate real human behaviour in opponent cars, using data gathered from real players. This means the AI tries to reflect how a player drives, such as how they drive in traffic and where they play aggressively.

Depending on the player's skill level, they can choose to race against the Drivatars of the game's best drivers, or against slower opponents more suited to their skill level.

The studio's creative director Dan Greenawalt describes the tech as a "quantum leap in evolution from traditional AI opponents", and says it wouldn't be possible without the firm's cloud technology.

"With millions of *Forza 5* players out there actively playing the game, that is a tremendous amount of data processing as players continue to update their Drivatars on a regular basis," says Greenawalt.

"Offloading those computational processes to the cloud also has the positive side effect of freeing up that extra power on the Xbox One itself, allowing us to use that power for our cutting-edging physics and graphics engines. We've really only begun to see what is possible with cloud computing in games.

"Drivatar is a great testament to the power of the Xbox One and the cloud, but it's far from the last one. In the coming years, we'll continue to see talented developers from across the industry using this technology in tremendously exciting ways."

showing the way and they didn't need next-gen hardware to do it."

Mazars believes the new generation of games consoles offer an opportunity to develop more engaging enemies that can be used by developers in more interesting and unique ways.

He explains that an AI designer's job is not to create NPCs smarter than the player – similar to Zielinski's earlier assertions about hitting a peak in AI – but to offer a more exciting way to engage with game characters and friends. Experiencing the seemingly serendipitous string of quests in *Skyrim* or the early *Fable* titles could be one indication.

"What you will notice is not harder-to-beat enemies but a more progressive level of difficulty throughout the game, with NPCs adapted to your learning curve," says Mazars.

"This improvement of AI will be a significant step forward for the player, offering a more progressive gameplay without those typical demotivating stages in the games when starting a new level.

"For sure, with a new hardware performance boost, and the distributed computing architecture of online games, AI will be more powerful, and we will be able to run more NPCs simultaneously. This will undoubtedly open up new game opportunities. But, to make sense for the player, we think this trend has to be continued, and conducted simultaneously with a better integration of AI in the creative process and the huge contribution of game designers to AI development. And this change has already begun."

Klein believes AI is becoming one of the most important aspects of any game, and says being better integrated into that creative process and becoming a central part of the emergent experience is the next step for AI.

"The biggest challenge for AI in games is adapting how we think of it and how we use it to drive user experience," he says. "The traditional view is that AI fills in the gaps of our virtual worlds characters and creatures that we interact with through pretty simple mechanisms. Rival Theory's perspective is that characters in games are at least as important as the games themselves, and that we should be doing more to enhance interaction and gameplay through them."

> ***"Soon it won't be acceptable to wait a year or two while AI programmers build all the systems."***
>
> Matthew Jack, Moon Collider

One of the biggest new challenges facing the development of smart AI, says Jack, is the changing nature of how some titles are made.

Games on Steam Early Access, for example, will require at least some form of clever AI opponents and companions early on in alpha stage to keep players entertained and happy, even when on the understanding that the game is yet to be finished.

INTELLIGENT FUTURE

Developers are building increasingly bigger worlds too, with sprawling MMOs such as *Star Wars: The Old Republic* and the Cloud Imperium's upcoming space sim *Star Citizen*, which features mile-long ships and spans dozens of solar systems.

"It's always been fast-paced and iterative, but there's a push towards involves players earlier and earlier in the process, shorter development cycles and responding to feedback quickly. At the same time, ambitions for game design are only growing," he explains.

"Soon it won't be acceptable for a designer to wait a year or two while AI programmers build all the systems to support their vision, before he can try out his ideas. But that's generally how it's done. AI programmers have few existing libraries or tools to draw upon, apart from what can be re-used from previous projects.

"That's part of how we see Kythera – developers benefiting from the features developed for other games. AI programmers have to 'stand on the shoulders of giants' to keep up with design and build towards those grand visions."

But despite the challenge, Jack sees these changes as an opportunity for developers to offer new experiences, and offers leading examples from indies and triple-A studios who are bringing the focus back to gameplay innovation, rather than simply trying to dazzle with stunning visuals.

"We're seeing more games where innovative AI techniques are fundamental to the design, like *The Last of Us* and the *Assassin's Creed* series," he says. "It will be the interactive crowds, the playful wildlife, the companion characters that will wow future players.

"And after that, it's taking a much more active involvement in the complex and ever evolving worlds of MMOs, such as *Star Citizen*. Making AI fully-fledged citizens of these worlds is going to be the next frontier." ■

The Last of Us and BioShock Infinite (far left) both exhibited stand AI companion's that generated strong reactions from players

AUTOMATIC GAME DESIGN

AI ISN'T JUST being used to develop realistic characters and challenging foes, it's also making games.

At least that's what computer scientist Mike Cook is experimenting with, and he's developed an AI system known as Angelina. Originally developed to solve specific technical problems, Cook later moved his focus to the world of video games designer.

"Over time I've moved much more into computational creativity, and now Angelina's primary focus is becoming more like a designer – owning its ideas, relating them to the real world, interacting with the games community," he says.

"It's been quite a shift but I'm very happy with where the project is going."

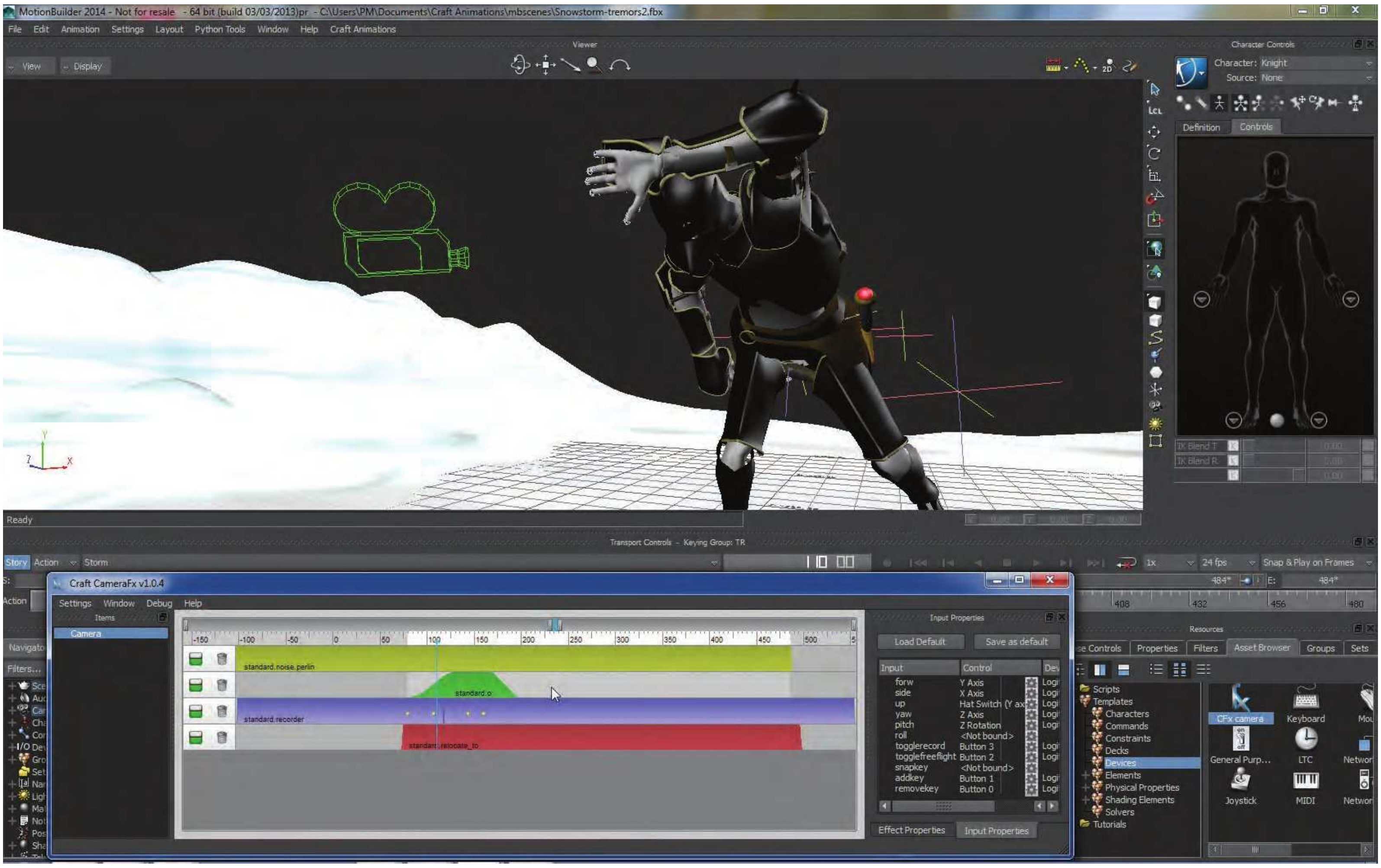
But how could such technology be useful to developers? Cook hopes such an AI system can help designers create levels in future, as well as teach new programmers how to craft richly details game worlds.

"Angelina can look at a task without the same kinds of presuppositions that human designers often have, which I think could become a really valuable tool one day," he states.

"I also think Angelina might be a good companion for new designers one day, to help them learn the basics of programming, level design, event triggers and so on, by offering a guiding hand."

Cook adds that after years of development, the next step for Angelina is more creativity and independence, needing less hand-holding when making its own games, like its platforming title *A Puzzling Present*.

"More creativity and independence," he says. "I hope Angelina will soon be generating game mechanics again inside Unity, and maybe taking steps to being less dependent on me for inspiration and direction. I'm also hoping to give Angelina the ability to commission other people for art and music. That's a secret project in the planning stages for now though."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Joystick
MIDI

Input	Control
forw	Y Axis
side	X Axis
up	Hat Switch (Y ax
yaw	Z Axis
pitch	Z Rotation
roll	<Not bound>
togglerecord	Button 3
togglefreeflight	Button 2
snapkey	<Not bound>
addkey	Button 1
removekey	Button 0

The human touch

Craft Animations hopes to give a new finesse to camera animation with its latest tool, Craft CameraFX. Product manager Patrik Martin tells **Will Freeman** more about how the tool helped shape the latest Splinter Cell

Patrik Martin (above) says Craft Animations is dedicated to making the process of animation easier, which is why its tools can be controlled with a console gamepad

For readers not familiar with Craft Animations, where has the company come from? What's your past experience?
Craft Animations started out from a research project that one of our founders Luigi Tramontana began at university.

The idea he had was that animation was quite cumbersome, and took a lot of time. So he made tools to help himself do better animations. He then realised that maybe somebody else would want the same tools, so in 2005, with the other founders Michael Belin and Debbie Lygonis, they formed the company Craft Animations.

Slightly later in 2006, the first version of Craft Director Studio was released. It wasn't called Craft Director Studio at that time, but later changed to that name. By 2010, we had bundled our tools up with 3ds Max, Maya and Softimage for the 2011 and later 2012 versions.

The main appeal of Craft Director Studio was the ability to create high quality animations in quite considerably less time than ordinary keyframing would take, but still have high quality.

Now in 2014, we're introducing the Craft CameraFX tool for Autodesk MotionBuilder.

So what does Craft CameraFX offer games developers?
Craft CameraFX is, as the name suggests, a camera animation tool, aimed to make it much more easy to animate cameras, and like our previous products, offers real-time animation. Craft CameraFX is for MotionBuilder, and has an even better system than we've had before. That's because you are controlling the timeline with, as an example, a gamepad or other input, and all the things you do are actually recorded inside the system right away.

> ***"One of our founders thought animation was cumbersome, so he made tools to help himself do better."***
> Patrik Martin, Craft Animations

It also offers a layering system, to allow users to add and remove or switch off layers, which will be familiar to people that have used Photoshop or MotionBuilder. In those layers you can create various effects that are applied to a camera, such as noise to shake a camera. Of course, you can do noise inside other systems but this makes it easy to do. And you can tweak, change, and see the results right away.

We really believe, also, that the layout of the software is much better and easier to understand than what we offered with Craft Director Studio. The workflow is very easy and it gives animators the results they want to create.

And you let the developer use a traditional game controller, such as an Xbox 360 controller – as well as other input devices – to assume direct control over a camera they are animating. What's the advantage to that method?
Really, it makes it easier. When a user picks up the gamepad, they can do their animations without needing to go in and click record or freeflight. You can control all of that from the gamepad. It gives a familiar way to control the animation all of the time.

So what inspired you to build Craft CameraFX as a standalone tool, when the previous approach with Craft Director

Studio saw you provide a suite of compatible tools and extensions?
One of the reasons we moved over to doing Craft CameraFX this way was the feedback from users of our other tools, and some of the ideas we had floating around. Ubisoft contacted us and said they wanted us to create a special version of our product just for them. But we saw the potential in their thinking and how it matched our thinking at the time, and realised we were looking at the same thing, and that we could create a product out of it.

We were developing Craft CameraFX at the time they were starting development on *Tom Clancy's Splinter Cell: Blacklist*. That meant they were giving Craft CameraFX a trial by fire, testing on the product as they went. That gave us feedback and we could tweak and change the product, which was great.

All the in-game camera animations in that game were created with Craft CameraFX, which is quite cool. And now they are working on the next game, but we can't say anything around that yet.

And the way we want to drive this project is doing a lot on what our customers think, and the feedback they give us.

But many established tools also handle camera animation among the many other functions they offer. Why is there a need for a dedicated camera animation tool?
I think in terms of how a user animates, what our system allows is the human side of animation. With input control, it brings a far more human feel to the animation. And using a system like ours offers a huge cost saving compared to, for example, working with a camera rig inside a motion capture setup.

By human touch, you mean input control can give the camera animations the feel of being operated by a real cameraperson?
Absolutely. Obviously using a gamepad won't be the same exactly as a real person using a real camera, but even in terms of those small, what you could call 'errors', input control can give that. Imagine you were targeting a certain object with the camera and that object moves, the human-operated camera will not move exactly at the same time and speed. There would be a small delay in following those movements.

Previously your clients have included EA, Ubisoft and – outside of games – General Motors, the US Air Force and Pixar. Does that mean you're aiming these tools only at triple-A games devs, or is Craft CameraFX suitable for all kinds of studios?
I would say it is suitable for smaller companies with smaller budgets. The tool itself is not that expensive in that sense. We also see that, as well as it being beneficial to games companies, it will have a role in the VFX area, and maybe at production companies. So it is very flexible.

> ***"Craft CameraFX can give the feeling that somebody is at the camera, depending on how you use it."***
>
> Patrik Martin, Craft Animations

For now Craft CameraFX supports MotionBuilder, but looking forward we are moving sometime over to support other 3D programs, and that will widen the possibility of other types of customers and studios taking up the tool. MotionBuilder is used by particular parts of the animation industry, but other tools are more suited elsewhere.

Your tools have also been used in many ways outside traditional use cases, even for forensic reconstruction or car design prototyping. What other uses for Craft CameraFX might there be, aside from direct control of cameras for the likes of cutscenes?
I think for pre-vis Craft CameraFX can be quite useful, just because of the simplicity and speed at which it lets you do simple camera animation.

So for any studios still unsure if Craft CameraFX is for them, what do you think would the most significant impact on their work be if they did embrace the tool?
It is that human touch part. It's a big one for Craft CameraFX. It can give the feeling that somebody is at the camera and filming. It depends, of course, how you use it. If you use the offsets and intend to make the animation stiff, you can get that stiffness. You can add onto the layers, the noise and movement and so on, to get what you want.

Also, of course, Craft CameraFX being quite simple and fast, and still creating high quality animations, is a big one for the tool. ■

Craft CameraFX is priced at $1,995, and is available for users of MotionBuilder 2012, 2013, 2014 and 2015. Purchasing the middleware includes a perpetual licence for the specific platform and host version of Craft CameraFX, as well as support. Users can access a trial of Craft CameraFX at: **www.craftanimations.com/products/craft-camerafx**

Craft CameraFX was developed in tandem with Tom Clancy's Splinter Cell: Blacklist (main, below), with feedback from Ubisoft helping to define the final toolset

Make your game shine

With new consoles, smartphones and tablet devices getting ever-more powerful with each passing year, creating visually stunning vistas and eye-pleasing visuals is becoming increasingly important. To help dazzle your players, **Craig Chapple** has put together a handy guide of 12 games development tools for all your graphics and rendering needs

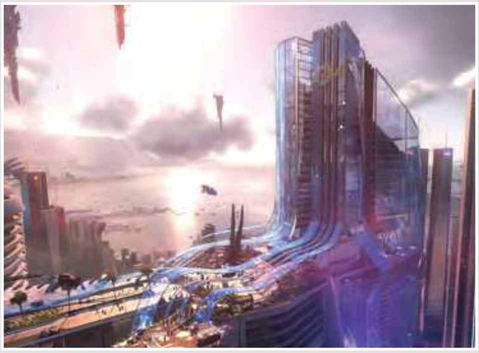
YEBIS 2

Company: Silicon Studio
Platform: Android, iOS, Linux, PS3, PS4, Vita, Windows, Xbox 360, Xbox One
www.siliconstudio.co.jp/middleware/yebis

YEBIS 2 IS a post-processing effects tool built by Japanese firm Silicon Studio.

The tech features customisable glare effects, including a high dynamic range rendering pipeline in which developers can adjust visuals in real-time. Other features include depth of field effects, motion blur, post-processing, anti-aliasing and an architecture that supports DirectX 11.

The tool can be used for games on PS4, PS3, Xbox One, Xbox 360, iOS, Android and PC.



UMBRA 3

Company: Umbra Software
Platform: iOS, Linux, PS3, PS4, Windows, Xbox 360, Xbox One
www.umbrasoftware.com

UMBRA 3 IS a visibility solution used for occlusion culling. The tool features automatic occluder generation and is designed to improve rendering performance and help with the creation of highly detailed game environments.

The tech only renders objects visible to the player, helping improve framerate and the aforementioned extra detail. To date the tool has been used by developers including CD Projekt, Bungie, Remedy and Guerrilla Games.

SPEEDTREE

Company: SpeedTree
Platform: Mac, PS3, PS4, Vita, Windows Xbox 360, Xbox One
www.speedtree.com

SPEEDTREE IS A vegetation modelling and rendering middleware. The tool can be used to create trees and plants and allows developers to control performance aspects including polygon counts, LOD transitions and fill rate.

Developers also have access to the SpeedTree Modeller, a compiler that automatically generates distant billboards and stitches texture maps together into a shared atlas, and users even have access to the full source code with the SDK.

MODO 801

Company: The Foundry
Platform: Linux, Mac, Windows
www.thefoundry.co.uk/products/modo

THE LATEST ITERATION of 3D content creation software Modo, 801 is built for 3D modelling, animation, sculpting, effects and rendering.

New features include node-based texturing with built-in presets, enhanced dynamics for large scene handling and destruction, improved scattering tools for scene layout and environment creation and new baking and modelling tools. Other additions include Nodal Shading for complex shader building and a rewritten referencing workflow for large scene management.

ENLIGHTEN

Company: Geomerics
Platform: Android, iOS, Linux, Mac, PS3, PS4, Vita, Wii U, Windows, Xbox 360, Xbox One
www.geomerics.com

ENLIGHTEN IS A popular dynamic game lighting tool used in games such as *Battlefield 4*, *The Bureau: XCom Declassified* and *Quantum Conundrum*.

Built by Geomerics, developers can use the middleware to animate lights, emissive material properties and control environment lighting in real-time through a set of controls and sliders.

Unity recently announced the global illumination tech would be integrated into Unity 5.

BEAST

Company: Autodesk
Platform: PS3, PS4, Wii, Windows, Xbox 360, Xbox One
gameware.autodesk.com/beast

AUTODESK'S BEAST MIDDLEWARE provides a set of tools for creating realistic lighting. Developers can simulate natural and physically correct lighting effects, colour bounce, soft shadows and high dynamic range lighting.

The tool allows artists to make changes to the geometry, lighting and baking properties of game levels, while the Beast API enables devs to integrate live scene authoring into custom game level editors.

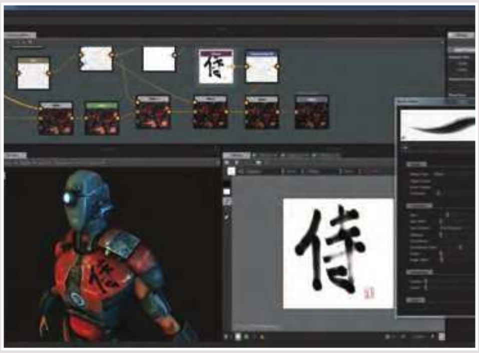
OGRE3D

Company: OGRE team
Platform: Linux, Mac, Windows
www.ogre3d.org

OGRE 3D (Object-Oriented Graphics Rendering Engine) is an open source, scene-oriented 3D graphics engine written in C++.

Specifically designed as a graphics solution (though it includes opportunities for other features), OGRE is designed to minimise the effort required to render 3D scenes.

The technology automatically deals with common requirements such as render state management, spatial culling and dealing with transparency, as well as features such as multiple shadow rendering techniques, a compositor system designed for full-screen for post-processing effects to be defined easily, and particle systems that include extensible emitters, affectors and renderers.



SUBSTANCE DESIGNER 4

Company: Allegorithmic
Platform: Android, iOS, Linux, Mac, PS4, Windows, Xbox One
www.allegorithmic.com

SUBSTANCE DESIGNER 4 is the latest iteration of Allegorithmic's texture creation tool. New features in the update include GPU-accelerated baking, a contemporary noise generator and hundreds of revised editing tools and filters.

The new version allows developers to create maps for physical-based rendering shaders, and virtualise materials directly in the 3D view with the PBR shader, as well as import their own. It also lets developers automatically extract information from the mesh, such as vector graphics UV Atlas, ambient occlusion, curvature and a high-poly / low-poly tangent space normal map.

The texturing tool has native support for Unity, UE4, 3ds Max, Maya, Modo and Fuse.

POWER VR RAY TRACING

Company: Imagination Technologies
Platform: Android, iOS, Linux, Windows
www.imgtec.com/powervr/raytracing.asp

IMAGINATION TECHNOLOGIES' POWERVR Ray Tracing tech is used by developers in rendering to help accurately simulate the transition of light.

The tools can be used to support pre-baked lighting in the form of light maps or light probes by enabling light maps to be baked in near real-time. This implementation of the technology will be integrated into Unity 5, which will be shipped later this year. According to Imagination, this will be the first development platform to ship with in-editor, real-time light map previews based on PowerVR Ray Tracing.

It is also possible to create a hybrid rendering system where an incremental scanline algorithm is used for visibility determination but ray tracing can be added to implement specific effects.

TORQUE 3D

Company: GarageGames
Platform: Windows, Mac
www.garagegames.com/products/torque-3d

TORQUE 3D IS one of an increasing number of open source game engines that houses its own lighting and rendering tools, among a number of other features.

The built-in rendering system includes per-pixel dynamic lighting, normal and parallax occlusion mapping, reflections, screen space ambient occlusion, a scattersky system for displaying the sun, stars and sky, extensible shaders in GLSL and HLSL, as well as a number of post-processing effects such as depth of field, light rays, lens flare and blurring.

Other features include deferred lighting, vertex and primitive buffers, state blocks and shader buffers. The rendering features are compatible with Windows and Mac OS X.

FABRIC ENGINE

Company: Fabric Software
Platform: Platform-agnostic
www.fabricengine.com

THE FABRIC ENGINE is a development framework built on a multi-threading core to help make it easier for developers to create high-performance and portable tools to integrate with existing applications, as well as run on their own or within a game engine.

The tech houses the Fabric RTR, which provides a framework to help enable the rapid development of advanced rendering techniques.

Included rendering techniques which can be extended include deferred shading, motion blur and depth of field, shadows and soft shadows, GPU skinning and HDR lighting.

Because of the Fabric Core, the RTR also requires no pre-compiled binaries or C++, and can be modified at all stages.

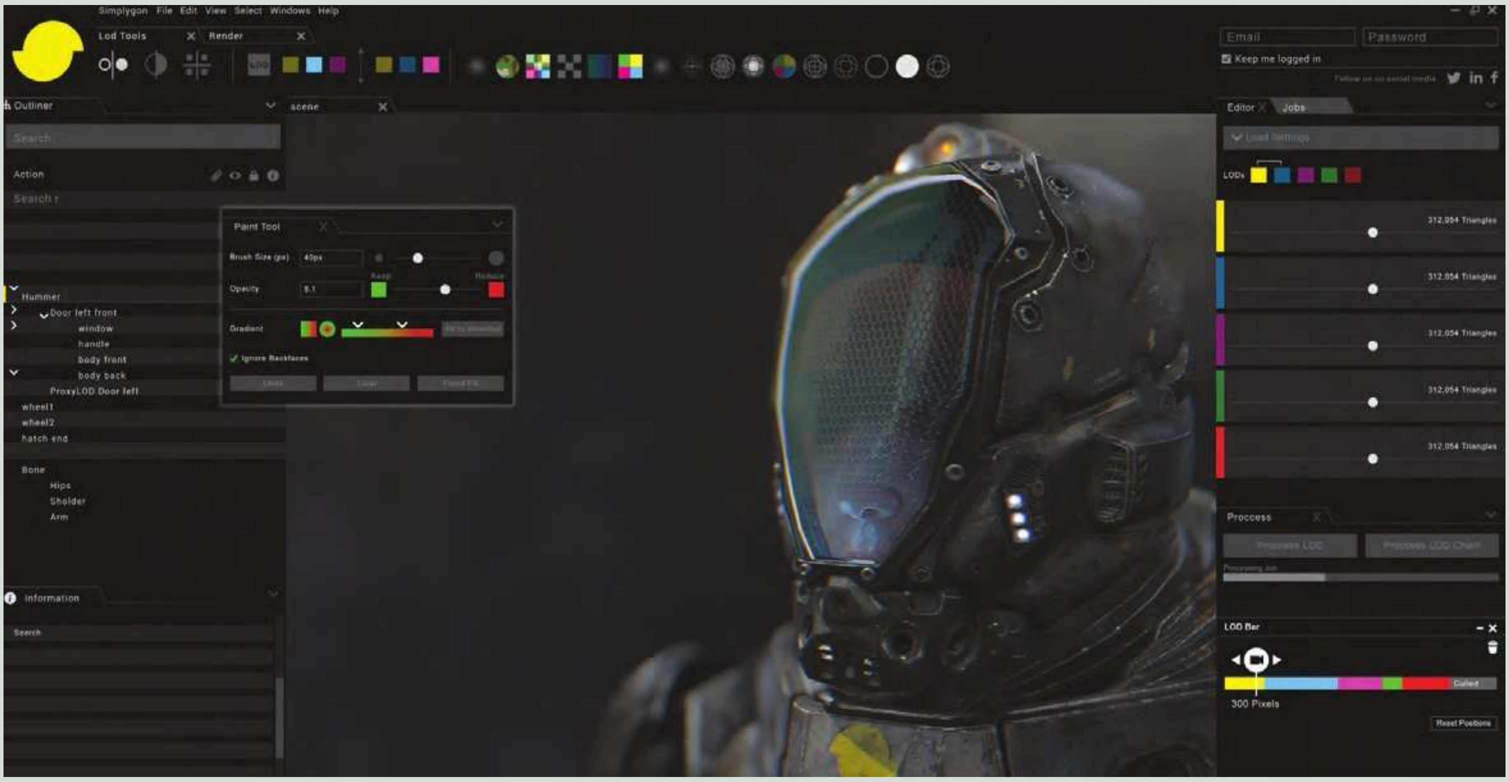
3DSMAX

Company: Autodesk
Platform: Platform-agnostic
www.autodesk.com

AUTODESK'S 3DS MAX software offers a modelling, animation, simulation and rendering solution for games and other entertainment sectors such as film.

The tool features ActiveShade rendering, enabling developers to iterate faster with interactive rendering, accelerated viewport performance, a render pass system to segment scenes for downstream compositing, and other integrated rendering options such as the inclusion of Nvidia's iray rendering tech.

Game developers can also harness the compositing editor to write together composites in Slate, as well as use a host of other tools to improve modelling, texturing, animation, dynamics and effects.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Bone
Hips
Sholder
Arm
Information
Email
Password
Keep me logged in
Editor
Jobs
LODs
312,054 Triangles
Process
LOD Bar
Culled
300 Pixels
Reset Positions

KEY RELEASE

The sixth optimisation station

Aaron Lee discovers why a UI renovation is making Simplygon 6 more versatile than ever

Donya Labs CEO Ulrik Lindahl (above) says Simplygon 6 (main) eliminates the tedious manual work generating LODs for game assets

THERE ARE DOZENS of ways to put 3D objects on-screen today. But the problem of maintaining their believability, no matter what the angle or proximity, while taking up as little memory as possible remains a taxing ordeal.

Tackling this issue head-on is Simplygon, a tool for the automatic optimisation of 3D game assets.

"We took something that has never worked, and just made it work," says Ulrik Lindahl, CTO and co-founder of Donya Labs. "We are the only company that spends all its R&D resources solely on perfecting this process."

Simplygon has been licensed for more than a hundred titles, including *Beyond: Two Souls*, *Destiny* and, most recently, *Star Citizen*. The tool is used for managing level of detail (LODs) for 3D game assets.

PC and console have long been the sector most suited to such a tool, but the rapid advancement of 3D gaming on smartphones and tablets means that its presence is in demand here, too. Fortunately, mobile is high on Donya's to-do list for Simplygon 6, the newest iteration of the optimisation middleware.

GON THE DISTANCE

Perhaps the biggest improvement to Simplygon 6 is its completely renovated UI. The new layout is promised to be simultaneously much more advanced and more user-friendly. "The old GUI had all the features exposed, but in the new version you are able to use modifiers to create custom presets for different use cases. For example, one interface design for characters and one for props or backgrounds," explains Lindahl.

The refreshed UI is based on a brand new renderer, which Donya says allows developers to work more interactively with scenes as well as in collaboration. What's more, Simplygon's features can still be accessed directly from the likes of 3ds Max, Maya and Softimage.

Beyond the navigation refresh, better optimisation features, such as MeshLOD, ProxyLOD and MaterialLOD, will allow devs to reduce the polygon count while creating an altogether new mesh. The same features can also generate texture atlases that incorporate all the details from the original asset.

LOD NATION

Donya's goal, says Lindahl, is to make Simplygon more accessible for smaller teams and mobile development too.

"Mobile devices by default still have limited performance and cannot handle many draw calls, so to use ProxyLOD to create optimised assets for a certain device or screen size will allow users larger game environments and more frames per second," he says.

Lindahl says it will continue to licence Simplygon on a per-project basis, depending on the type and size of the project. But it is also working on widening accessibility through its cloud service.

Alongside these upgrades, the middleware's reputation as a time-saving aid for removing repetitive manual work remains unblemished.

"Eliminating tedious manual work in optimisation is the foundation of Simplygon and we have ideas on how to further increase efficiency in games development," sums up Lindahl.

"With demands on better-looking assets and a range of new platforms, we have many areas that need our attention. Our growing team of 3D optimisation experts is working hard on facing the challenges head on." ■

Simplygon 6
What is it? Middleware for the automatic optimisation of 3D game content and level of detail
Company: Donya Labs
www.simplygon.com

HEARD ABOUT

Driveclub's evolution

John Broomhall talks with Evolution Studios' audio manager Alan McDermott about PS4 racer Driveclub

THE EVOLUTION AUDIO team is highly regarded for its work on *MotorStorm*, but even for an established crew, PS4 title *Driveclub* posed an interesting challenge.

Audio manager Alan McDermott describes the game as "a very different animal" to *MotorStorm*, meaning the team couldn't use the same creative licence as before.

"A Ferrari has to sound like a Ferrari," he explains, "but you don't just want a literal replication that can be sterile and underwhelming. You can't add turbo sounds to a naturally aspirated engine so the drama has to come elsewhere by simulating the experience, not just the engines.

"When you're travelling at 197mph, a lot of things race through your mind adding to that visceral experience, but not 'wow, the resonance when we hit 7500rpm in sixth gear is interesting'. It's more like 'there is definitely not enough road left'."

Evolution knew it had to aim for authenticity but, as McDermott puts it, "turned up to eleven". Most consumers' perceptions of the cars featured in *Driveclub* will be based on how they sound in films, so the studio used this as a starting point.

"The thing is, movies tend to 'cheat' with tricks like 'infinite gears', while on YouTube, clips are often awash with distortion," says McDermott. "For us, simulating the experience, not just the physical engine, was key, so we set out to reflect the feeling – to keep an incredibly authentic sounding engine without compromising on drama."

TUNED FOR SPEED

That's all well and good, but what about managing the creative and technical production parameters when specifics of the new platform are not crystallised?

"It's tricky but we have a team of low-level tech guys who gave us an excellent framework to work within at an early stage," McDermott says. "There was a lot of development of our in-house engine and, more importantly, research around our fundamental car engine-building approach. In the early days there's a lot of rapid prototyping involved while the specifics of the hardware are being ironed out. You might not know the fine details, but you have to use the time early on to best advantage, defining creative goals and paving the way forward in readiness.

"We discussed ambitious plans at length, during which our senior sound designer Tim Shepherd revealed he'd been experimenting with a new concept for engine audio, something new and potentially groundbreaking – and it clearly had legs. *Driveclub* was the best possible motivation to redefine not only how we implemented engine audio, but also how we recorded it."

Shepherd's method was to use at least 16 discreet channels of on-board audio recording using high quality, high SPL microphones in precise positions around each vehicle. Internal audio was captured with a surround microphone, and two sets of stereo shotguns handled trackside recordings.

> ***"The car makers have been very impressed with the quality and level of detail of the recordings."***
>
> Alan McDermott, Evolution

McDermott says: "We pushed the cars pretty hard on the track and, where possible, mounted them on a dynamometer; going to town capturing extremely high quality audio with second, third and fourth gear sweeps. The car manufacturers have been very impressed with the quality and level of detail – BMW even requested a copy of the relevant recordings to replace their existing libraries.

"And we brought the exact same passion to the soundtrack with an original score from Hybrid, also re-imagined by remix royalty like DJ Shadow, Noisia, Chris Clark and Photek. Of course, you have to be continually mindful of the potential for cacophony in a driving game but we avoided this by always mixing the game throughout development rather than throwing it all together and sitting down to mix two weeks from the end – we constantly kept an eye on how new elements affected existing elements."

Looking back at the experience, McDermott describes managing communications with the various car manufacturers as "a full-time job in itself", but the benefits of the sound team interacting directly with these firms was vital to the development of *Driveclub*.

"The car makers were very impressed to see the commitment and enthusiasm we put into making their vehicles sound as good as possible," he says. "Overall, I guess the thing I'm most pleased about is how readily our small audio team stood up to a mighty challenge, injecting ingenuity at every turn to deliver a driving game audio presentation which, I believe, is truly world-class." ■

Evolution's Alan McDermott (above) says he and his team set out to reflect the feeling of experiencing high-end motorcars in upcoming PS4 exclusive Driveclub (main)

Driveclub
Developer: Evolution Studios
Publisher: Sony
Platform: PS4
www.driveclub.com

John Broomhall is a game audio specialist creating and directing music, sound and dialogue. Find him at: **www.johnbroomhall.co.uk**

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INDUSTRY EXCELLENCE AWARDS 2014

LEAGU

The Finalists

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Guerrilla Games Guerilla Tea **Hansoft** Havok **High Score Proc**
Jagex Keywords International **King** Kiss Ltd **Llamasoft** Locali
Microsoft Modern Dream **Mudvark** NaturalMotion **nDreams**
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UNREAL DIARIES

The dawn of a new community

Developers, middleware technologies and content creators rally behind Unreal Engine 4

Striking 3D environments, such as the Sci-Fi Hallway (above) and the interior of the Starship Bridge VR demo (below), are being created by the talented Unreal Engine 4 development community

ONE MONTH AFTER Unreal Engine 4's online launch, Epic Games released its 4.1 update, bringing PlayStation 4 and Xbox One support to subscribers at no additional cost, along with SteamOS and Linux features, mobile upgrades, and more than 100 improvements based on community feedback.

Also released for free through the UE4 Marketplace was Epic's *Elemental* demo, which has been used to showcase high-end visuals on PC and console.

Developers are using UE4 to build games and apps for PC, Mac, iOS, Android, PS4, Xbox One, Oculus, Project Morpheus, SteamOS, Linux and HTML5. The latter four platforms are still considered preview efforts for source code users at the time of writing.

With the engine's full C++ source code – and even live source code access – available to subscribers, developers are propelling Epic's efforts forward and sharing exciting new projects at a rapid pace.

"The community that has quickly grown up around UE4 has surpassed our expectations," says Unreal Engine general manager Ray Davis. "Not only in terms of the number of developers who immediately jumped in and started building, but also the amount of contributions they've started to make back to the engine itself via the GitHub network."

> ***"I almost have the sensation of being a movie director when working with Unreal Engine 4."***
>
> Thomas Kadlec, Developer

Epic highlights noteworthy community projects – spanning games, VR apps and tools – via its weekly Twitch broadcast. One experience that has made big waves is the *Starship Bridge* demo by Thomas Kadlec, a high-fidelity Oculus environment set within *Star Trek*'s USS Voyager.

In an interview with a VR site, Kadlec said: "I almost have the sensation of being a movie director when working with Unreal Engine 4. I can come up with an idea and in a matter of minutes [have] an implementation that looks really amazing."

Davis says: "We actually launched with Oculus support back in March. We are continually impressed by the innovations coming from developers working with VR, and it seemed only natural to make sure UE4 is a great toolset for that innovation."

Many talented artists frequent Polycount's forums, and tools provider Quixel fits right in with its high-end toolkit, Quixel Suite, which is in open beta. Quixel's Wiktor Öhman created a *Deus Ex*-inspired scene, which is coming to Marketplace for free, listed as Sci-Fi Scene.

To check out UE4 and read blog posts from the dev team, visit **www.unrealengine.com**. Weekly Twitch broadcast are every Thursday at 6pm GMT. Tune in at **www.twitch.tv/unrealengine** for the livestream. ■

UPCOMING EPIC ATTENDED EVENTS

Electronic Entertainment Expo 2014
June 10th to 12th, Los Angeles, USA

Develop Conference 2014
July 8th to 10th, Brighton, UK

GDC Europe 2014
August 11th to 13th, Cologne, Germany

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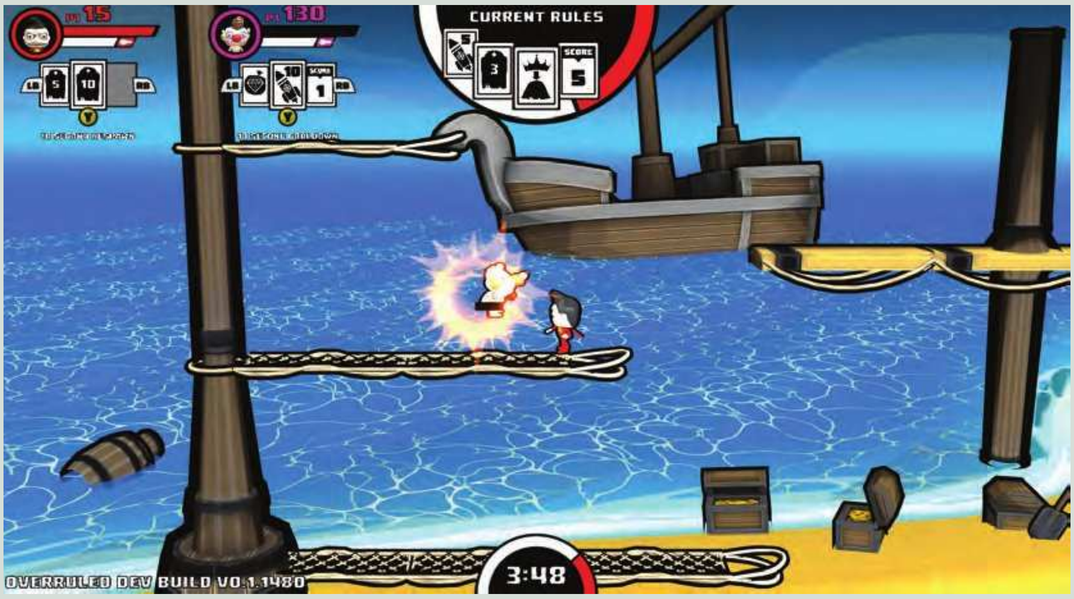
MICROSOFT SPOTLIGHT

Cloud management

A look at how Microsoft's Visual Studio Online can help both indies and triple-A giants manage their projects



Main: Dlala's latest work-in-progress Overruled!, for which the studio has harnessed Visual Online Studio to help manage the project

IN A WORLD where there's no such thing as a typical games development studio, picking the right tool to manage your team, projects and assets can be daunting.

Can a tool suited for studios that share the same office also give teams spread across several locations the same power and flexibility? In the era of the cloud, where geography has become but a passing concern, the answer is now yes. And, founded as it is onthe Microsoft Azure cloud back-end, Visual Studio Online offers a tempting proposition for those pondering the right tool with which to manage their studio.

Simply put Visual Studio Online provides a portal through which to organise a project and assign tasks, share assets with robust source control, test and bug check. It is also a repository for anything team members have created, and a place to share ideas for studios that rarely enjoy face-to-face time with all their colleagues in one place.

AHEAD IN THE CLOUD

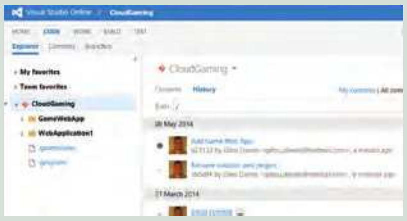
"Being cloud hosted means that you don't need to install anything on a server or maintain and update the software," says Giles Davies, Microsoft's developer technology specialist, on the benefits of Visual Studio Online. "That in turn means that it is fast to get going, doesn't require ongoing administration, and is accessible to anyone with an internet connection. It's also free for up to five users."

The make-up of Visual Studio Online also makes welcoming new team members or contractors on board particularly simple, without any need for them to install or access any software, and does much to democratise access to agile planning, providing tools to manage product backlog, check velocity, set sprints, perform sprint planning, provide task boards, show burndown and more.

Visual Studio Online additionally includes a new technology called Application Insights, which furthers access to the power of Microsoft Azure and the cloud.

"It's currently in preview and provides production telemetry that gives you runtime information on the use of your app or game," offers Davies. "Examples include availability – so you can find out before your users tell you that the game isn't available, and exception reporting, so you can be aware of the problems your users experience, as well as performance statistics and usage information such as device types, browsers, resolutions, operating systems and a lot more."

> **_Visual Studio Online has been the key tool to keep Dlala and our projects organised._**
>
> AJ Grand-Scrutton, Dlala



ALL SHAPES AND SIZES

In addition, Visual Studio Online purports to be designed from the ground up to serve teams of any size. Indeed, it can even serve as a practical tool for solo developers looking to organise a project, but comes into its own serving teams from two members to almost any size one could imagine. Enterprise-type features even allow vast studios to use the tool to manage and support distinct sub-teams working together on a large-scale project.

And its cross-platform prowess certainly offers appeal for any team pondering adopting the solution.

"Visual Studio Online itself is in the cloud, and can be accessed via any modern browser, across platforms," says Davies. "It integrates into a range of local development and testing tools, including Visual Studio, Eclipse, XCode – via Git, Microsoft Test Manager, Excel and Project.

A CASE IN POINT

Visual Studio Online is yet another example of the power of the cloud not just to deliver games to the public, but to make games, and one such development team using it is UK indie Dlala Studios.

"Visual Studio Online has been the key tool for me to keep the studio and our projects organised, we've used it when there was two of us in separate locations and seven of us in one location," explains studio co-founder AJ Grand-Scrutton. "And we still use it now with five separate locations and a further three outsourcers."

With Dlala's in-development manic multiplayer arcade action game *Overruled!* courting praise , Dlala is clearly getting something right. With Visual Studio Online serving as a foundation for the project, they can move forward confident they have a reliable, powerful foundation on which to continue that success. ■

Visual Studio Online
What is it? A powerful cloud-based tool that harnesses Azure to allow studios of any size and make-up to manage teams, projects and assets, bug tracking, testing, source control and much else besides
www.visualstudio.com

Top to bottom: Dlala co-founder AJ Grand-Scrutton and Microsoft's developer technology specialist Giles Davies.

TESTRONIC TALKS

Putting mobile to the test

Alastair Harsant of Testronic, the global provider of testing services, discusses the benefits of cross-site collaboration, good communication, knowledge sharing and its importance during the delivery of mobile games testing

Testronic VP of games operations Alastair Harsant believes testing services are vital to ensure developers can keep a level of control on what is ultimately an unpredictable process

What exactly do you mean by the term cross-site collaborations?

Long before the uptake of smartphones and tablet devices, Testronic recognised the benefits of delivering multi-site solutions for clients requiring functional, compliance, compatibility and language services as well as ensuring that the communication channels are always operating between the delivery groups and client.

Vital to the collaboration is ensuring that we assign key staff to each testing group and identify one member of the team as the pivot point between Testronic and the client. Furthermore, due to the differing time scales when testing, experiences and strategies learned in areas like functional testing – such as who typically starts the process earlier in the test cycle – can be shared for the benefit of other services.

Why does it matter?

Testing is still a very people-driven environment when it comes to execution. Automation has and will continue to be an industry buzzword, but the necessity for talented and dedicated individuals who know how to test products is undeniable. It is essential to have personnel who understand the fundamentals of testing and have an appreciation of the 'bigger picture' when considering timelines.

A workforce with an appreciation of the different genres in gaming that are also aware of relevant budgets and have experience in the challenges that games developers face can substantially increase the likelihood of successful games development. As mentioned previously, there is an abundance of sharing experiences and notes between each of our testing groups which is continually built upon with each cross-site collaboration.

Testronic works with a varied portfolio of technology-based clients and, over the years, has seen a steady increase of projects in the mobile industry. These are known for their short and intense test cycles – particularly when compared to the large, traditional console projects – and regular overlapping service requirements.

It is imperative therefore, when time and budgets are so precious, that testing time is used both efficiently and effectively.

Appropriate maximisation of this can be achieved by collaboration and support among the test groups, as well as clear communication channels between the vendor and the client.

Is QA a big deal?

The image of games testing services in the industry, along with localisation, is gradually changing and being recognised as an integral part of the successful development process. This is not just in order to make a game that releases on time, but essentially to produce one that has every chance to deliver ROI and be a market leader.

For mobile releases with in-app purchase options, multi-territory and language specific requirements, it is vital to ensure that the game is compatible and culturally acceptable in order to attain a solid foothold in the market upon release.

Moreover, player retention rates are hugely important, so along with maximising short-term success, it is key to ensure that your current player-base is retained while exploring ways to increase it long-term. Having a technically robust game that works in all areas in regards to how you interact with it, is extremely important.

As the saying goes, content is king. Keeping this in mind, and the fact that the games market is incredibly competitive, planning wisely and working with a test vendor can help to gain a level of 'control' on what is ultimately a dynamic and unpredictable process.

The barriers to entry in the mobile market might be far lower than console, but there are still many pitfalls to avoid if you want to make money.

What has been the most exciting collaboration with a client?

At Testronic we are lucky enough to be working with some of the biggest names in the gaming industry; discretion being an integral part of our service, we are not in a position to specify whom.

Our long-term partners have their unique requirements, which we enjoy and excel in adjusting to. One of our successful mobile clients, who has exceeded one billion downloads, is a feather in our cap we're particularly proud of. Both our companies have grown together, adapting and refining the testing processes with great results for both parties. The partnership works well and we are able to apply our experience to other clients and offer the best service possible.

We are particularly proud of our achievements and look forward to sharing our expertise with our future clients as we grow as a company. ■

Testronic
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Mobile Games Testing

> ***"The barriers to entry in mobile might be far lower than console, but there are still many pitfalls to avoid if you want to make money."***
>
> Alastair Harsant, Testronic

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UNITY FOCUS

Room at the top

Technical director **Rob Dodd** tells us the role Unity played in the construction of Fireproof Games' The Room Two

Unity was the only engine that would allow Fireproof to make The Room Two (main) as quickly and painlessly as it did, says Rob Dodd

Why did you choose Unity for *The Room Two*?
The original reason we chose Unity is that it's great for small teams – especially on the coding side. You can make a huge amount of progress in a very short time, whereas most other engines would have bogged you down trying to get the basics working. It's not that it necessarily lets us do things that other engines don't, it's that it lets us do them quicker, easier and with less hair pulled out along the way.

Originally, we were a two-man team amazed by Unity's ability to let us quickly prototype ideas. By the end of *TRT*, we were a studio of 15, impressed with how easily it scales up to a full production environment.

Why is Unity suited to smart devices?
Unity's great for doing mobile in a few ways. It does a good job of hiding the differences between platforms, so if you're developing on PC, there won't be too many surprises when you run it on mobile. Likewise, it hides a lot of the differences between Android and iOS development, so although doing a great conversion is still a big job, Unity takes a lot of the pain out of it, and it mostly comes down to making sure your assets are appropriate for your target platform.

From a development perspective, how have you improved on the original?
We'd like to think we improved pretty much all of it. *The Room* was our first game for mobile, so we learned a huge amount during development that we applied in the sequel. We had a much better understanding of where the performance problems are on mobile, and so were able to make a better looking game that still ran at pretty much the same speed. The bigger team that we had on *The Room Two* allowed us to add more polish, so better VFX, fuller environments, cloud saving and so on. It's generally much slicker.

Which Unity features were most helpful?
The great thing about Unity is how well it all fits together as a package. Virtually all of the features are well thought out, well presented and thoroughly documented. There's no one stand-out feature – you're buying a complete game creation package. In the rare cases where something's missing, Unity's community has usually provided a solution on the Asset Store.

Which features needed improving?
In any piece of software as big as Unity, there's going to be the odd niggle. The animation system certainly has a few irritating quirks, and the particle system probably doesn't quite match up to some of the competition. The lack of a good built-in UI system has been a problem in the past, but that's going to be put right very soon.

The recent announcement of Unity 5, with the new lighting and shader systems, looks like it'll really help make our games shine.

What was the biggest lesson you learned about using Unity during the development of *The Room Two*?
Use the Asset Store. As well as a tonne of art assets, it's got a huge amount of extensions for Unity, which can really make your life easier during production. In general, if you're writing some code, thinking 'surely loads of people have had to write this', then there's almost always a solution already available for a few dollars.

Would you recommend Unity to others?
Absolutely, I do exactly that on a regular basis. There's no question in my mind that Unity is the only engine that would have allowed us to make *The Room* and *The Room Two* as quickly, painlessly and to as high a standard as we did. ■

The Room Two
Developer: Fireproof Games
Publisher: Fireproof Games
Platform: Android, iOS, Kindle
www.fireproofgames.com/the-room-two

PITBULL BYTES

Start-ups: Find your niche

Robert Troughton explains how specialising can help devs avoid the pitfalls that many new studios face

AS MANY OF you will already know, Pitbull Studio is a company with a very tight specialisation – we are a group of very experienced developers with a huge amount of Unreal Engine experience; consisting mostly of programmers, just a small handful of artists and a tiny management team.

When we created ‘new’ Pitbull in 2010 (‘old’ Pitbull having spent over 12 years making racing games for console and PC), we didn’t actually plan things quite this way. Sure, we’d come off the back of making *Wheelman* (as Midway Newcastle), the first open-world racing game built using Unreal Engine 3, but at first we had planned to do exactly the same thing as every other studio rising from the ashes of a dead giant: we were going to make small-scale mobile and digital download games. We were going to mitigate risk by having a small full-time team and using contractors for additional work.

Very soon after starting, though, it became apparent that this business model was a bad one. It was a very dangerous time to be making those games. New consoles were on the horizon, meaning that publishers were losing interest in digital download titles for the older platforms, and the mobile market was being flooded with really great games.

Medium-to-large studios in the UK were closing on an almost daily basis – and with each closure, at least three new studios would form, all making mobile games, most using Unity, all hoping to hit it big with the next *Angry Birds*. Some did, and are now in a position where they could quite happily sleep on a bed of cash – like Fireproof Games, creators of the excellent *The Room*, for instance. Others weren’t so lucky: Thumbstar, Blast Furnace, Hogrocket and countless others.

> **“Think about how you can make a difference. It’s easier than reinventing the wheel.”**
>
> Robert Troughton, Pitbull

Our first attempt to break out of this was moderately successful, but was still a huge risk. We became a work-for-hire company alongside our funded contract with the UK’s NHS, which went fairly well.

RISKY BUSINESS

The risk here came from the studios themselves: all asked to pay us on completion or after a decent period of time (at least two-to-three weeks’ work).

A few paid us without any issues, a few paid us late, and a few didn’t pay us at all. See, there are several reasons why you might outsource work, but most notably either because you genuinely need some additional manpower ASAP, or – and this is the worrying one – maybe you can’t afford to pay additional staff. Using a contractor, you get your game finished and it either saves your studio or not. If not, the studio closes and the contractor is left short-changed.

Our second and final attempt was the one that we did really well with. While we’d dallied with work-for-hire, I’d been contracting myself to Epic Games and working on Unreal Engine 3, developing the editor itself rather than creating games with it. This had actually been going really well and it was safe work.

After doing this for a couple of months, they suggested that we add a couple of extra people, then more a few months after that – and as time went on we just grew and grew. We found our niche.

We became a huge part of the development of Unreal Engine 4. It was annoying for a while, not being able to tell people what we were working on at first, but when the demos, licensee versions and ultimately the full public release arrived, we finally got the recognition from the industry that we’d hoped for. Our inboxes flooded with applause, the team was elated to see the responses from those trying out UE4.

So my advice to anyone who asks me now about starting up a new studio: find your own niche. Find something that you and your team are passionate about. Think about how you can make a difference and create something new. It’s a lot easier than reinventing the wheel. ■

www.pitbullstudio.co.uk

Pitbull Studio MD Robert Troughton (above) says his team has found its niche by specialising in work for Unreal Engine

MADE WITH MARMALADE

The seven steps of Juice

Marmalade offers a How To guide to bringing your Objective-C games to Android using Marmalade Juice

CANDY BLAST MANIA™
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Marmalade Juice allows developers to convert their Objective-C iOS titles, such as Storm8's Candy Blast Mania (above) for Android devices

MARMALADE JUICE IS the latest service added to the Marmalade SDK, enabling devs to publish iOS apps on Android by adding the 'clang' compiler and support for core app APIs on top of the C++SDK. This enables native iOS Objective-C titles to deploy as native code on Android with no virtual machine, so the code runs fast.

So how does it actually work and what steps get you from Objective-C to Android?

1. CONVERSION PROCESS

The initial conversion process takes your original iOS Xcode project, and generates a corresponding Marmalade MKB project configured to use the Juice libraries and toolchain. This is done through the SDK Hub, so open this, choose Juice and click Starter Tutorial. Click the 'Convert XCode' button, which gives you an Xcode Report. Then go to the Project details page.

2. BUILD YOUR CONVERTED PROJECT

Next, open the project in your IDE via the Hub. This step uses the MKB project to create a Juice Xcode project ready for building, and then launches Xcode to open it. This project exists in parallel with your original iOS project, but shares the same source files. That means you can apply updates to both your iOS and Juice versions of your app at the same time.

The projects can share resource files too, but it's common to have different versions for Juice builds, optimised to suit new platforms. Run the debug x86 build scheme for the Marmalade Simulator. Your game will now start to build and run in the Marmalade Simulator.

3. FIXING ERRORS

As this is the first pass attempt to get the core game up and running, comment out or provide stub functions for the time being to work around any errors. Return to them later to complete the conversion.

4. SIMULATOR AND DEVICE TESTING

When your app builds, try running it initially in the Marmalade simulator. At this stage we're focusing on getting the core app up and running, so skip any asserts and make necessary configuration changes. When you're happy the core of your app is working, select the debug or release GCC ARM build schemes and build those. This will create an Android ARM build ready for deployment.

Return to your project's page in the Hub. In the 'Deployment panel', set the desired deployment options, connect an Android device via USB then click on the green 'Package/Install/Run' button. This will package your app and install it.

5. MAINTAINING IOS COMPATIBILITY

As the source is shared between the iOS and Juice versions, code changes should be conditionally compiled for the Juice build so it's easier to switch between the two without duplicating the source. To add platform-specific functionality, create this in separate modules that you can add to just the Juice project.

6. COMPLETING CONVERSION

Return to any code workarounds from the initial pass and address these. Add any platform-specific features, or configure platform-specific versions of features from your iOS project, such as in-app purchases. Test and tune your build on the device to achieve the performance you intend.

7. SUBMITTING TO STORE

Once you're happy with the Juice version, you can proceed to store submission. Follow the guides to the Google and Amazon store submissions available in the Marmalade documentation.

Marmalade Juice is free in the Marmalade SDK. Check the website for licence details and special offers. ■

Why Marmalade matters:
Juice enables developers to recompile legacy or live iOS apps to run natively for Android.
www.madewithmarmlade.com

DIRECTORY

The world's premier listing of games development studios, tools, outsourcing specialists, services and courses…

SERVICES SPOTLIGHT:

DeltaDNA's analytics platform

p62

TOOLS SPOTLIGHT:

Mobile app engine Gingee

p63

TRAINING SPOTLIGHT:

The Glasgow School of Art

p64

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SERVICES SPOTLIGHT

This month: **DeltaDNA**

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EH1 3AA

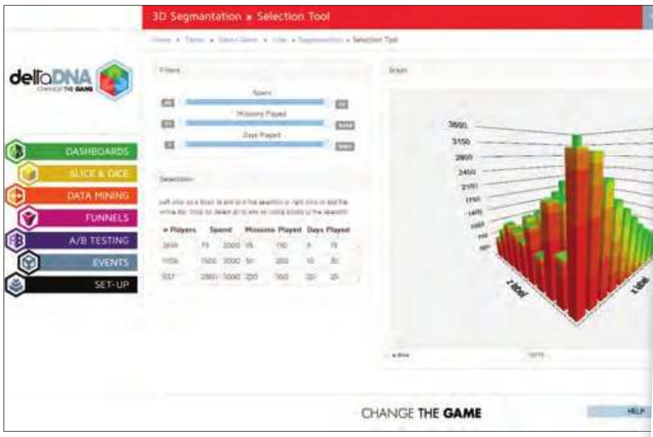
T: 0131 557 0639
E: info@deltadna.com
W: www.deltadna.com

ANALYTICS FIRM DELTADNA aims to help developers make their free-to-play games more engaging. That's no easy feat, as anybody who's dabbled in the F2P market will know.

The DeltaDNA platform has been built to perform real-time analysis on hundreds of millions of game events as they happen.

"The fundamental difference is that we go much deeper into the data to really understand player behaviours," CEO Mark Robinson tells *Develop*. "It's taking the data to this granular level and in real-time which is unique."

> ***"Focusing on player engagement is the only option for creating successful F2P games."***
>
> Mark Robinson, DeltaDNA



A look at DeltaDNA's analytics service (above) and its CEO Mark Robinson (right)

The Edinburgh-based company was founded in 2010 as GamesAnalytics. Earlier this year it rebranded, taking that same name as its renewed analytics service.

DeltaDNA's analytics platform is a suite of advanced data mining, A/B testing and 3D segmentation tools.

Publishers and developers including Sony, Sega, Ubisoft and 505 Games have all used the service.

On a typical project for a new developer, the DeltaDNA platform is designed to collect rich data from the game. Then insight is generated to help them understand the different player behaviours active. Finally, DeltaDNA measures the uplift in engagement and starts refining.

Social casino operator PlaySpace uses the DeltaDNA service to help optimise its player experience and drive engagement for its popular cross-platform social game *Parchis* – based on the family board game Ludo.

"After an assessment of the game design, we worked with PlaySpace to understand key player segments and understand where there were retention issues and opportunities for further spend," Robinson explains. "This has helped increase the number of very engaged users – playing more than ten days in a row – by 350 per cent while improving the number of returning players by 26 per cent."

Next on DeltaDNA's agenda is to build out support for predictive modelling so it can widen its net and pinpoint precise elements of persistent grinding and game imbalance problems in projects.

"With soaring acquisition costs now outstripping Player Lifetime Value in many cases, focusing on player engagement is the only viable option for creating and sustaining successful F2P games," concludes Robinson. "Developers need to listen to what their players are telling them."

Digital Design Studio www.gsa.ac.uk/dds

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TOOLS SPOTLIGHT

This month: **Gingee (Gingee)**

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Israel

T: +972 (3) 652 3020
E: support@gingee.com
W: www.gingee.com

ROEI LIVNEH SET out to solve a problem faced by millions of developers: with the plethora of mobile platforms, how can you make a game that will perform well and look good across any platform and device?

This obstacle led him to create Gingee, a cross-platform development solution that, he says, enables any developer to create a game or app that can run on all current and future devices and operating systems without the need for customisation.

"This means that a game developed today can not only run on iOS 7 and Android 4.4 KitKat, but also on iOS 8, Android 4.5 or 5.5, Blackberry 10, Smart TVs, PCs, tablets and so on," Livneh, Gingee CEO, tells *Develop*.

Gingee points out that there are more than 11,000 different Android devices running eight distinct Android OSes, as well as multiple smartphones and tablets running iOS, BlackBerry and Windows Phone.

Roei Livneh (left) and an example of a Gingee game (above)

> ***"A game created today can not only run on iOS 7 and Android 4.4, but also on iOS 8."***
> Roei Livneh, Gingee

Through Gingee's Liquid UI technology, based on a proprietary algorithm, which analyses the relations between objects and maps them uniformly for all platforms, OSes and devices, Livneh says developers are able to ensure an identical experience everywhere. As gamers are increasingly playing across devices, from mobiles to tablets, the need for such a solution is becoming more pronounced.

"With games providing an immersive graphical experience, Gingee's technology enables the delivery of near-native performance because of direct communication with the OS. This facilitates running games with hundreds of objects on the screen simultaneously without adversely impacting the performance of the game or device, regardless of how many other applications are running simultaneously," he says.

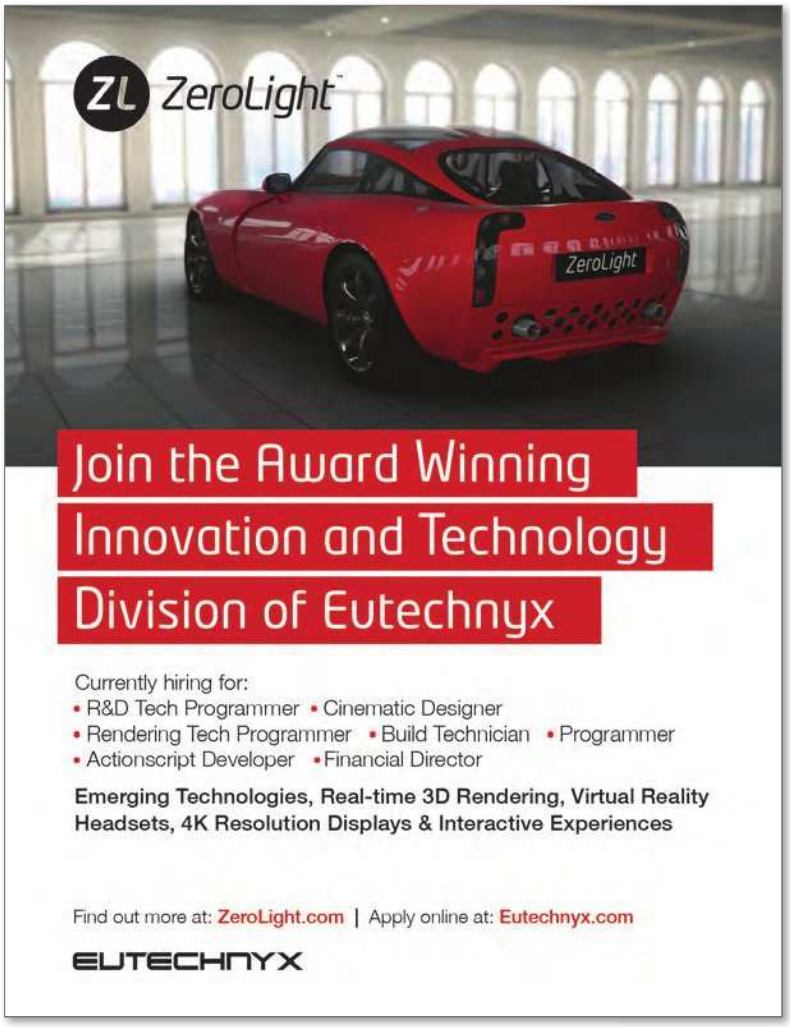
The interface itself is drag-and-drop-like, which enables development without coding for iOS, all Android versions and devices, BlackBerry, mobile web and more.

Gingee's Independent Development Environment (IDE) then automatically generates the programming code – one code in one pipeline distributed simultaneously to all platforms. Thanks to such a method, Livneh claims that Gingee can cut development time by up to 50 per cent. The tool is currently being used by more than 500 indie developers, according to Livneh.

The usability of Gingee's solution was put to the test at a recent hackathon, where most of the participants had never written a line of code. All 11 hackathon apps were written using the tool, the firm says.

Gingee is available as a limited free version, while the Pro version is priced at $500 per seat.

Eutechnyx www.eutechnyx.com



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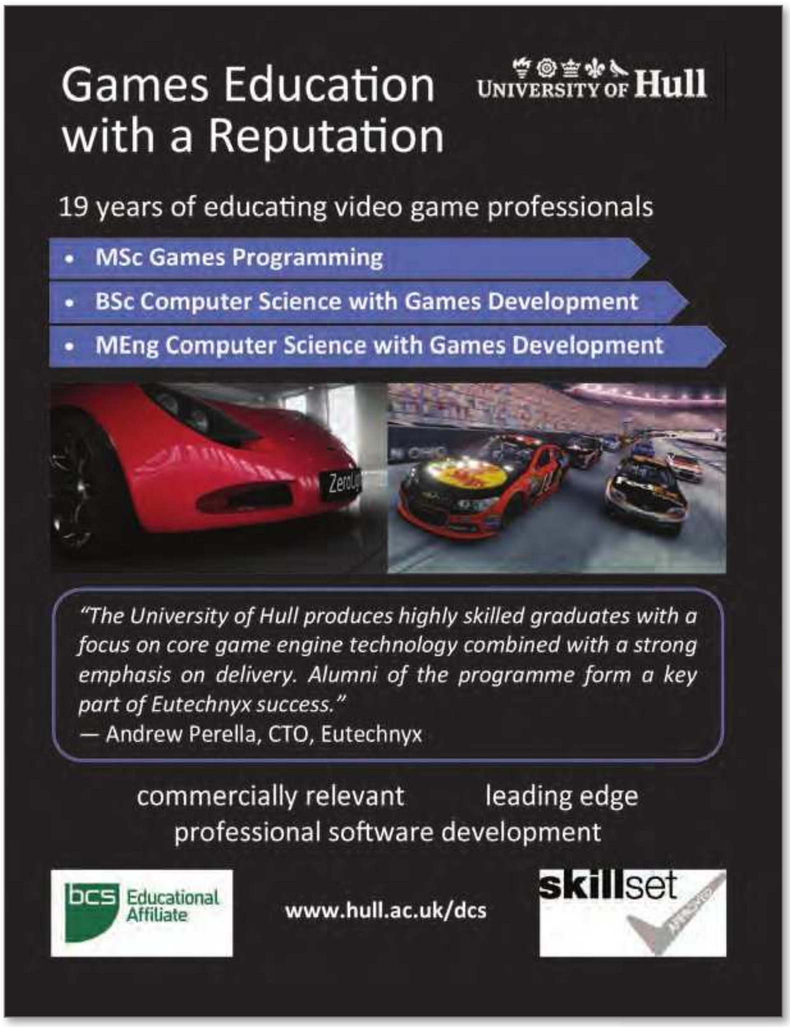

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The Hub (above) offers a variety of student services, coffee bars and a food court with seating for 400

A render of Rosslyn Chapel (top) and knights in combot (bottom), made for a conservation project

THE GLASGOW SCHOOl of Art's Digital Design Studio is part research centre, part commercial games development studio. It has created games and animations for the likes of NHS Education Scotland, museums and visitor centres, as well as clients in industrial sectors.

The courses themselves are for students who are interested in the wider application of interactive technology in society – or serious games, as it's commonly know.

"We have our own sound dubbing studio, regularly used for film, BBC and network TV," programme leader Daniel Livingstone tells *Develop*. "Our animators, programmers and sound production staff provide a range of tutorial and practical support, so students have frequent contact with industry professionals, as well as dedicated teaching staff."

GSoA's MSc Serious Games programme is for students whose first degree includes software development. Alongside programming and theory classes, students choose between medical or heritage visualisation as context for creating a Unity-based serious game. Mo-cap and interaction get students to work with a range of haptic devices and VR systems. While a second serious games project, plus student-selected modules, round out the taught courses, followed by a three-month main project for students to focus on their own games.

The other visualisation programmes are more interdisciplinary, with students coming from backgrounds such as life sciences, history, architecture and animation.

Livingstone says sound students do most of their work within the DDS, with two selected modules allowing students to extend their studies into other practical or theoretical areas related to sound and filmmaking, or to pursue personal interests elsewhere at the art school.

He added that GSoA has some of the best VR and mo-cap facilities of any university in the UK, with a massive 13m 3D screen and a Vicon motion-tracking suite.

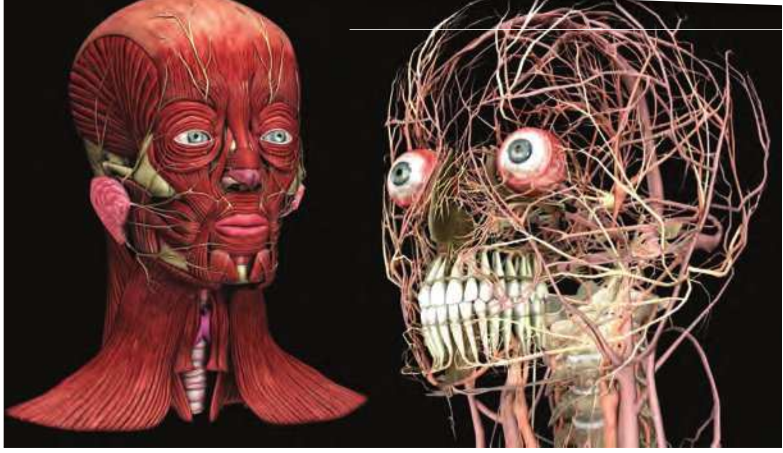
And its not short on other tools either, including 3ds Max for animation and a range of data-processing applications for 3D and Pro Tools, Avid and MaxMSP for sound.

Alumni from the course have gone on to destinations in research positions at other universities, as well as found work at businesses such as Rockstar, Sony Computer Entertainment, Savalas Sound, Axis Animation and Toshiba Medical Visualisation Systems. Others have also found work at the DDS itself.

"The visualisation courses are all quite young, but we've already learned a lot from the Medical Visualisation programme," Livingstone says.

He and his colleagues are now making minor changes to improve interaction across the degree courses next year. Longer term, they are looking to developing new collaborations and courses.

He concludes: "Whether considering a career shift or looking for an opportunity to refine skills after graduation, the postgraduate courses at the DDS offer a great opportunity to build and apply games development skills in different discipline areas while working close to experts in those areas."



These renders of the human nervous system and muscles (above) show that DDS is all about great detail

INFO

Course: MSc Serious Game Development, MSc Medical Visualisation and Human Anatomy, MSc International Heritage Visualisation, MDes Sound for the Moving Image
Established: 1997
Country: UK
Staff: **Daniel Livingstone** (programme leader), **Ronan Breslin** (sound lecturer), **Gillian Moffat** (animation lecturer)
Notable alumni: **Susie Green** (SCEE), **Tom Bryant** (Axis Animation, Interference Pattern)

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THE FAQ PAGE: MARTYN BROWN

Develop grills respected figures from the global games industry

Who are you and what do you do?
I'm Martyn Brown and I run a consultancy that supports and accelerates independent studios and publishers. In these modern times, start-ups need all the assistance they can get, so my team and I aim to provide all the things they likely never thought about.

What are you working on right now?
We've been working with New Star Games for a while now and also the brilliant team at Exient, who recently did *Angry Birds GO!* As well as that, I've been working with a number of indies and advising a number of companies. Lots in the pipeline.

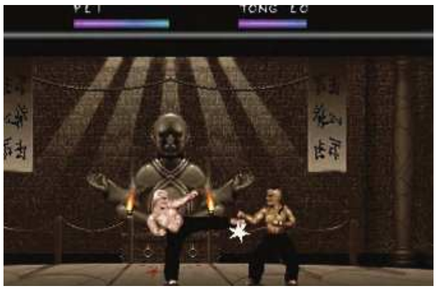
What was the first video game or product that you ever worked on in the industry?
I developed a game back in 1984 on the Spectrum, it got released and even reviewed in *Crash!*.That makes me very old. I consider my real industry beginnings with Team17 when we published *Full Contact, Alien Breed* and so on.

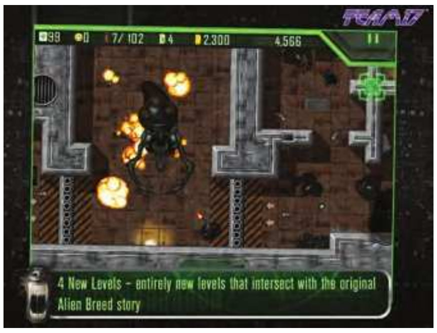
What was the most recent video game you played, and did you enjoy it?
The last major title I played through was *The Last of Us*. I loved it. Incredible, really.

What was the first video game you ever played, and did you enjoy it?
I'd say one of the *Pong* games on a home system in the mid 70s. I was mesmerised by it. I got into trouble for standing on an 8-track tape when I was messing with it.

Team17 co-founder Martyn Brown sees the UK firm's Alien Breed and Full Contact as the true beginning of his games industry career

> ***I've spent hours on Cilivization, engrossed. And I love that my sons play Civ V religiously.***





4 New Levels – entirely new levels that intersect with the original Alien Breed story

What is your favourite game ever, and for what reason?
Probably the *Civilization* series; I spent hours on it, engrossed. And I love that my sons play *Civ V* religiously.

How many hours a week do you spend playing video games?
Actually, I just have quick bursts on mobile stuff these days, so I'd say six-to-eight hours.

What area of the games industry needs more 'investment'?
I think the support and nurturing of new studios and start-ups. The corporates need more intellectual investment in mobile, before they experience what happened to the dinosaurs.

What do you enjoy about the video games industry today?
That it's a level playing field on mobile. There's opportunities for all, after the dark period of closed systems and the snobbery and arrogance that went with it.

What disappoints you about the video games industry today?
That some of the mobile stuff is so incredibly cynical. And that corporate publishers make such blundering errors time after time.

Of all the games you have worked on, which has been your favourite?
I'd say the first *Alien Breed*, the first *Worms* game. I love both games in equal measure for different reasons.

What game that you were not involved with would you most liked to have worked on?
There's hundreds, it's easy to forget that there have been so many brilliant games. *Civilization*, then.

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Editor
James Batchelor
james.batchelor@intentmedia.co.uk

Contributing Editor
Will Freeman
will.freeman@intentmedia.co.uk

Designer
Philip Randall
philip.randall@intentmedia.co.uk

Deputy Editor
Craig Chapple
craig.chapple@intentmedia.co.uk

Publisher
Michael French
michael.french@intentmedia.co.uk

Production Manager
Kelly Jones
kelly.jones@intentmedia.co.uk

Staff Writer
Aaron Lee
aaron.lee@intentmedia.co.uk

Sales Manager
Alex Boucher
alex.boucher@intentmedia.co.uk

Sales Executive
Katy Bensley
katy.bensley@intentmedia.co.uk

Contributors
John Broomhall, Nick Gibson, Alastair Harsant, Clive Moody, Robert Troughton, Alex Ward, Ashley Westgate

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